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NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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Chemical Lead and Regulus Metal

SINGULARLY few standard specifications have been debated more than those relating to chemical lead and regulus metal. It is not an easy matter to define a standard for chemical lead when its applications are so manifold. A chemical sheet lead may be admirable for a sulphuric acid chamber, but less satisfactory for an ammonium sulphate saturator or for the saucer of a Glover tower. The British Engineering Standards Association have pursued a wise course in their efforts to compile a standard specification which would meet general requirements. They have not confined their deliberations to a few specialists, but have freely consulted all the various organisations interested in this matter, among which may be mentioned the Institution of Chemical Engineers, the Institute of Metals, and the Society of Chemical Industry. The outcome is that the standard specification, No. 334 of 1928, for chemical sheet lead (the substance of which is published in this issue) will be generally accepted as satisfactory, and as representing the best possible standard that could be compiled in the circumstances.

While the conclusion reached is that chemical analysis alone can finally establish the suitability for practical purposes, what is difficult, as was emphasised by Mr. P. Parrish in his paper on "Corrosion and Erosion of Chemical Sheet Lead," delivered at the Chemists' Congress in July, 1926, is the ability to conduct a chemical analysis on every sheet of lead when one is receiving within a short period several hundred sheets for the construction of chemical plant. To overcome this difficulty, two empirical tests have been suggested—the flash and the aqua regia tests. These are well known to most users of chemical sheet lead, and their continued use for more than a decade is a signal proof of their utility. The temperature at which violent and complete decomposition of a test piece of chemical lead occurs when immersed in 95% pure sulphuric acid is defined as the flash test, and a good quality chemical lead should not flash below 285° C., whereas for high temperature work, such as lead for concentration pans and the saucers of Glover towers, a flash point of 300° C. is rightly recommended. The features of the second test, where a sample piece of lead is suspended in aqua regia which is brought to a temperature of 71° C. and then raised to 109° C. during twenty minutes, are the conditions under which spots of lead chloride appear, and the nature of the vigorous chemical action resulting and the condition of the discs after the test. These empirical tests admit of the classification of chemical lead into four categories, namely, very good, good, fair and bad.

The Committee has wisely indicated not only the amount of any single impurity which chemical sheet lead may contain, but has deemed it expedient to allow a certain latitude as regards the copper content, in that this metal occupies a somewhat special position. Buyers are open to specify the maximum percentage of copper below the specified figure of 0·05 per cent. This will give general satisfaction, and should effectually prevent the use of copper for masking the faults of an inferior lead. Standard specification No. 335 of 1928, relating to regulus metal, appears to be sound in all respects. The British Engineering Standards Association has discharged a very useful service, which will be generally appreciated.

Safeguarding Inquiries

THE recent decision, which places calcium biphosphate (baking powder quality) within the Safeguarding of Industries Act and inferentially defines it as a fine chemical, still continues to excite discussion and probably will be the subject of notice in the President's address at the annual meeting of the Chemical and Dyestuffs Traders next week. The

question of what is or is not a fine chemical is one that admits of no conclusive answer. The experts are hopelessly divergent, and their conflicting theories as to the conditions that distinguish a "fine" from a "heavy" chemical may be said to cancel one another out. For the chemist it is an academic problem that promises endless disputation; for the merchant it becomes a matter of great commercial interest, when a decision for or against a certain commodity means the retention or the loss of a considerable market in it.

The decision in the recent case had one new feature about it. It was given almost immediately on the close of the inquiry, and it was accompanied by no statement of the legal or chemical grounds on which it was based. In this matter it followed the wary advice to inexperienced justices to content themselves with announcing their decision and to refrain from disclosing the grounds for it. Those who unsuccessfully resisted the addition of calcium biphosphate to the list of dutiable articles are thus left with no remedy. They cannot appeal because there is no appeal from the referee's decision; they cannot criticise the decision effectively because they do not know the reasons that support it. They can only protest that safeguarding has really come to mean protection under a new name. Frankly, it is a form of protection; it seriously restricts the old right of unrestricted importation, on which the merchanting industry has largely been built up. Naturally, the merchant class are actively hostile to it, and are a little concerned as to how many more chemical commodities may be included under the procedure which has brought this last case within the Act. While the Act and the procedure remain, they have no power of redress where the referee's decision goes against them. The only remedy lies in the repeal of the Act, and their appeal on that point must, of course, be to Parliament.

Steadily Improving Chemical Trade

THE returns of overseas chemical trade for the month of May confirm the progressive improvement shown in the reports for the previous months of this year. Comparing the figures for the first five months of 1928 with the corresponding period of 1927, imports of chemicals, drugs, dyes, and colours have declined £137,104, exports have increased £1,097,850, and re-exports have increased £19,048. There is, fortunately, every indication that this steady advance will continue. For the month of May alone imports show an increase on the corresponding month of 1927, the advance occurring mainly in tartaric acid, coal tar products, and extracts for tanning. In the last item the increase is from £94,461 to £150,206. On the exports side, ammonium sulphate has suffered a temporary check, the figures having declined from £329,184 to £286,592. On the other hand, exports of coal tar products have nearly doubled, advancing from £210,208 to £404,755. There is a good increase in drugs and medicines, and dyes and dyestuffs have advanced from £67,296 to £85,260. Of late, a healthier tone has been noticed throughout the chemical industry, and the feeling is more of hope than of anxiety.

The Dyeing Dispute

THE position of the textile industry, in which dyestuff manufacturers and users are closely concerned, is not made any lighter by the unfortunate dispute among the dyers and finishers, as the result of which between 6,000 and 7,000 dyers are now on strike. It is some comfort, of course, that in an industry employing about 80,000 workers the actual stoppage should be limited to a comparatively small section, and as the points in dispute look to most outsiders to be much too small to justify a wholesale stoppage of business, the threatened conflict may yet be averted. It seems lamentable that so little use should have been made of the time that was available for negotiation, and that matters should have been allowed to reach a critical point before any really energetic attempt at a settlement was made. This policy of mere drift frequently ends that way—weeks of passive inactivity, then an excited realisation of real trouble and a frantic effort to do within a few hours under pressure what might have been done at leisure by the aid of reason on both sides. People in the districts concerned now realise that a general stoppage, in the present state of the textile industry, would be a disaster, and it is to be hoped that the vigorous steps now being taken to effect a settlement will meet with speedy success.

Books Received

REPORT ON THE ECONOMIC SITUATION IN ITALY. April, 1928. By E. C. Donaldson Rawlins and H. C. A. Carpenter. London: H.M. Stationery Office. Pp. 128. 3s. 6d.

STUDIES IN THE GROWTH OF GRAPES. By P. R. v. d. R. Copeman. Parts IV, V and VI. Department of Agriculture, Union of South Africa.

ORGANIC SYNTHESES. New York: John Wiley and Sons, Inc. London: Chapman and Hall, Ltd. Pp. 141. 10s.

MODERN ROADMAKING. By Harold Bradley and C. C. Hancock. London: The Contractors Record, Ltd. Pp. 312. 15s.

THE INDUSTRIAL USES OF BAUXITE. By N. V. S. Knibbs. London: Ernest Benn, Ltd. Pp. 141. 21s.

INDUSTRIAL CATALYSIS. By Stanley J. Green. London: Ernest Benn, Ltd. Pp. 507. 50s.

The Calendar

June 23	Mining Institute of Scotland: General Meeting. 3 p.m.	St. Margaret's Hall, Dunfermline.
23	North of England Institute of Mining and Mechanical Engineers. 2.30 p.m.	Newcastle-upon-Tyne
23 to 30	Congrés du Chauffage Industriel.	Conservatoire National des Arts et Metiers de Paris.
26	World's Dairy Congress.	Central Hall, Westminster, London.
26	National Physical Laboratory: Annual Visit of Inspection. 3 to 6 p.m.	Teddington.
27	Ceramic Society: Visit of American Ceramic Society.	Stoke-on-Trent.
28	Royal Society. 4.30 p.m.	Burlington House, London.
28	Society of Glass Technology. 11.15 a.m.	University, Sheffield.
28	British Chemical and Dyestuffs Traders' Association: Fifth Annual General Meeting. 2.30 p.m.	London.
July 9 & 10	Merchandise Marks Inquiry: Pumps. 11.30 a.m. on Monday, July 9, and 10.30 a.m. on Tuesday, July 10.	Board of Trade, Great George Street, London.
9 to 14	Royal Photographic Society: International Congress of Photography.	London.
10	University College, Nottingham: Opening of the New University College Buildings.	Nottingham.

International Address Presented to Professor Sidney Young

THE ABOVE GROUP WAS TAKEN AT TRINITY COLLEGE, DUBLIN, ON FRIDAY, JUNE 15, WHEN PROFESSOR SYDNEY YOUNG, F.R.S., RECEIVED AN ADDRESS SIGNED BY CHEMISTS FROM ALL PARTS OF THE WORLD IN RECOGNITION OF HIS RESEARCH WORK. LEFT TO RIGHT: THE PROVOST, PROFESSOR E. A. WERNER, PROFESSOR YOUNG, PROFESSOR F. HACKETT, PROFESSOR W. E. ADENEY AND DR. J. BELL. PROFESSOR YOUNG, WHO IS HOLDER OF THE CHAIR OF CHEMISTRY IN TRINITY COLLEGE, DUBLIN, IS RETIRING FROM HIS POST, WHICH HE HAS HELD FOR 25 YEARS. HE IS 70 YEARS OF AGE, HAVING BEEN BORN IN 1857. EDUCATED AT OWENS COLLEGE AND STRASSBURG UNIVERSITY, HE JOINED THE CHEMICAL STAFF OF UNIVERSITY COLLEGE, BRISTOL (NOW THE UNIVERSITY OF BRISTOL) IN 1882, BECOMING PROFESSOR IN 1887, A POST WHICH HE HELD UNTIL HE WENT TO DUBLIN IN 1903. HE HAS PUBLISHED A LARGE AMOUNT OF RESEARCH WORK, ESPECIALLY ON THE PHYSICAL CHEMISTRY OF LIQUIDS AND THEIR DISTILLATION. HE HAS BEEN A MEMBER OF THE ADVISORY COUNCIL OF THE DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH, PRESIDENT OF THE ROYAL IRISH ACADEMY, A VICE-PRESIDENT OF THE CHEMICAL SOCIETY, AND A MEMBER OF THE COUNCIL OF THE INSTITUTE OF CHEMISTRY. THE ADDRESS PRESENTED TO HIM TOOK THE FORM OF AN APPRECIATION OF HIS FUNDAMENTAL DISCOVERIES IN PHYSICAL CHEMISTRY. THE IDEA OF THE ADDRESS ORIGINATED WITH PROFESSOR TIMMERMANS, OF BRUSSELS, WHO CO-OPERATED WITH DR. ATKINS, OF PLYMOUTH. IT WAS SIGNED BY TWO HUNDRED AND TEN PEOPLE, FROM THE UNITED KINGDOM, UNITED STATES, GERMANY, FRANCE, HOLLAND, BELGIUM, SPAIN, SWITZERLAND, ITALY, INDIA, CEYLON, CHINA AND WEST AFRICA.

Specifications for Chemical Lead and Regulus Metal

Two Important B.E.S.A. Publications

At the Congress of Chemists, held in London in 1926, considerable interest was aroused by a paper on chemical sheet lead contributed by Mr. P. Parrish, and there was a sharp discussion on the question of purity. The British Engineering Standards Association have now issued a British Standard Specification (No. 334 of 1928) for Chemical Lead (primarily for sulphuric acid chambers and similar purposes. Specification No. 335 (1928) deals with Regulus Metal.

THERE are serious difficulties, states Specification 334, in ensuring the suitability of lead for chemical plant. Local failures have occasionally been found to occur in sheets of lead owing to physical or chemical defects, and it is therefore desirable to examine and test as many samples as practicable. The Committee, therefore, while recognising that chemical analysis alone can finally establish chemical quality, recommends the use of the Flash and Aqua Regia Tests as useful indicators of the chemical suitability of lead. It has been found, as the result of 12 years' experience in the chemical industry, that lead which passes both these preliminary tests is, in most cases, of good chemical quality. These tests also in certain cases have revealed physical defects in the samples. The committee have included as a matter of general interest the results of analyses carried out by five different authorities, by the methods recommended. Appendix IV contains a list of analyses obtained from a large number of samples of chamber lead. The Committee feels that an examination of the appendices will show that the tests they are recommending are appropriate for general use.

The Specification stipulates that the content of metallic lead shall be not less than 99·99 per cent., but in the event of copper being present, the lead content may be reduced by an amount not exceeding the amount of such copper. The lead supplied shall be homogeneous and free from lamination and oxide inclusions. The total amount of all the impurities specified below, excluding copper, shall not exceed 0·01 per cent. The maximum amount of any single impurity shall not exceed the following figures :—

Silver	0·002 per cent.
Bismuth	0·005 ,,
Iron	0·003 ,,
Antimony	0·002 ,,
Zinc	0·002 ,,
Copper	0·05 ,,
Nickel and Cobalt together	0·001 ,,
Tin, Cadmium, Arsenic	Traces.

A "trace" is a quantity which, while being sufficient to indicate the presence of a particular substance, is so minute as to be negligible in comparison with the amounts of the other impurities.

Recommended Tests for Chemical Lead

In Appendix I it is laid down that the complete chemical analysis is the only universally sound guide as to the quality of lead. The following empirical tests have, however, proved useful in the selection of suitable lead.

Flash Test

A sample of the lead approximately ½ inch square is placed in a 100 c.c. flask or beaker containing 50 c.c. of approximately 95 per cent. pure sulphuric acid in which the bulb of a thermometer is completely immersed. The temperature is then raised so that in seven minutes 300° C. would be reached. In cases of lead of good quality, violent and complete decomposition (*i.e.*, flashing) does not occur below 285° C. Only leads showing a flash point of 300° C. or over should be employed for high temperature work such as concentrating pans.

Aqua Regia Test

(*a*) *Preparation of Aqua Regia.*

1 volume hydrochloric acid 28° Tw. (1·14 sp. gr.).
2 volumes nitric acid 100° Tw. (1·50 sp. gr.).
3 volumes water.

The water is placed in a flask and the nitric acid added slowly with frequent agitation. After cooling to the temperature of the room, the hydrochloric acid is added gradually and the whole well mixed, placed in stoppered bottles, and stored in a cold place. It is desirable that the acid should not be used for at least 12 hours after mixing.

(*b*) *Preparation of Sample.*—A disc approximately ¾ inch (19 mm.) diameter is cut from each sample of lead, filed smooth and round, and stamped with its reference number. The filed discs are washed for a few minutes with 10 per cent. caustic soda solution, then well washed with water and dried with a clean cloth.

(*c*) *Method of Testing.*—In a tall 600 c.c. beaker standing on a gauze-covered tripod are placed 300 c.c. of the aqua regia. Two discs are supported by a glass cradle in the beaker and a thermometer (Centigrade) suspended on a level with the discs. The beaker and contents are heated and a note is made of the time at which 71° C. is reached, and the heating continued cautiously so that the temperature rises at the rate of 3° C. every minute. When 100° C. is reached, the rate of heating is increased till the maximum temperature of 109° C. is reached.

During this time (from 71° C.) the lead discs must be closely watched, and the time at which the first spots of lead chloride appear noted for each disc; the scrutiny is kept up until vigorous action commences, and that time is noted. The test shall be continued for 20 minutes from the time 71° C. is reached, and this time must be adhered to. At the end of this 20 minutes the discs are lifted out, plunged into water, and well washed.

(*d*) *Classification.*—Lead is usually classed under four different headings, *viz.* :—

	Spots of Lead Chloride appear in :—	Vigorous Action	Examination of Disc after Test.
Very good.	Not less than 16 minutes.	No vigorous action during test (20 mins.)	No appreciable pitting, and no uneven attack.
Good.	Not less than 14 minutes.	No vigorous action during test (20 mins.).	Slight pitting and slight uneven attack.
Fair.	Not less than 12 minutes.	Develops at *not* less than 18 minutes.	No deep pitting; moderate and uneven attack.
Bad.	Less than 12 minutes.	Develops at less than 18 minutes.	Heavy and deep pitting; vigorous and very uneven attack. Visible reduction of thickness.

Recommended Method for Analysis

In Appendix II, recommendations are made respecting the method of analysis.

(*a*) *General.*—The methods of analysis outlined are for determining the quantities of the impurities which may be found in chemical lead. They are recommended particularly for use in carrying out reference or check analyses of samples where the composition is open to doubt, or where the original analyses have given results which do not agree.

(*b*) *Impurities.*—The following impurities are generally determined in Chemical Lead :—Silver, Bismuth, Copper, Cadmium, Arsenic, Antimony, Tin, Iron, Nickel (and Cobalt) and Zinc. The lead is taken by difference.

(*c*) *Blank Analyses.*—It is absolutely essential that a blank analysis of all reagents used be carried through, along with the analysis of the sample.

(*d*) *Preparation of Sample.*—As large a bulk sample as possible should be taken, a representative portion being taken from each sheet or similar piece. In the case of pig lead, the sample should be taken by drilling or sawing. The whole sample is then cut up into small pieces and thoroughly mixed and halved and quartered in the usual manner, so that the resulting sample for analysis has a weight of not less than 700 grm. The sample for analysis should then be cleaned, first with ether or acetone and afterwards with dilute hydrochloric acid.

(*e*) *Determination of Silver.*—Silver shall be determined by cupelling 200 grm. of the sample in a high grade cupel at as low a working temperature as possible.

The specification, in addition to many further details relating to analysis, contains the detailed results of analyses by the method recommended carried out by five independent authorities on the same sample of chemical lead, and 89 actual analyses of chamber leads, together with observations on their flash point and aqua regia tests. The Association point out that as the standard specifications are subjected to periodical review, suggestions for improvements will be

welcomed at all times. Attention is also drawn to the fact that the specification is intended to include the technical conditions necessary for the supply of chemical lead, but does not purport to comprise all the necessary conditions of a contract.

The full specification may be obtained direct from the Publications Department (28, Victoria Street, London, S.W.1), of the British Engineering Standards Association (price 2s. net, post free 2s. 2d.).

Regulus Metal

British Standard Specification No. 335 (1928) (price 2s.) deals with regulus metal.

With regard to quality, it is stipulated that the lead used for making this metal shall contain not less than 99·9 per cent. metallic lead, but in the event of antimony being present in the lead, the lead content may be reduced by an amount not exceeding the amount of such antimony. The antimony shall contain not less than 99·5 per cent. metallic antimony, but in the event of lead being present in the antimony, the antimony content may be reduced by an amount not exceeding the amount of such lead.

Chemical Composition

The alloy shall consist of lead and antimony in one of the following proportions as may be specified :—

	6 to 8 per cent Regulus Metal.	8 to 10 per cent. Regulus Metal.	10 to 12 per cent. Regulus Metal.	Over 12 per cent. Regulus Metal.
Antimony	6 to 8 per cent.	8 to 10 per cent.	10 to 12 per cent.	Over 12 per cent.
Lead	The remainder.			
Impurities :—				
Arsenic not to exceed	0·01	00·1	00·1	00·1
Zinc ,, ,,	0·01	0·01	0·01	0·01
Copper ,, ,,	0·10	0·10	0·10	0·10
Tin ,, ,,	0·10	0·10	0·10	0·10
Sulphur ,, ,,	0·02	0·02	0·02	0·02

The proportions may be varied according to the size of the casting and the pressure or load to be sustained. The purposes for which the several alloys may be suitably employed are indicated below.

Tensile Strength

The minimum ultimate tensile strength shall be determined on a cast stick of the alloy, or in the case of castings, preferably on a piece cut from a representative portion of the casting. The several alloys shall have the minimum ultimate tensile strengths set out in the following table :—

	Minimum Ultimate Tensile Strength.	
	Lb. per sq. in.	Kg. per mm.
6 to 8 per cent. Regulus Metal ..	6,000	4·22
8 to 10 ,, ,, ,, ..	7,000	4·91
10 to 12 ,, ,, ,, ..	8,000	5·62
Over 12 ,, ,, ,, ..	9,000	6·33

Brinell Test

The Brinell hardness test shall be determined with a 10 mm. ball and a load of 500 kilogrammes, and the several alloys shall show Brinell hardness numbers not less than those given in the following table :—

6 to 8 per cent. Regulus Metal	15
8 to 10 ,, ,, ,, ...	16
10 to 12 ,, ,, ,, ...	17
Over 12 ,, ,, ,, ...	19

Uses of the Alloys

6 to 8 per cent. regulus metal may be employed for the construction of tanks, acid eggs, acid pans and containing vessels ; 8 to 10 per cent. for valves, ejectors, acid pumps, plugs, pans and working parts to withstand mechanical action, chiefly abrasion ; and 10 to 12 per cent. for small parts requiring to be machined all over, such as screws or threaded and finished parts.

Method of Sampling and Analysis

Owing to the special nature of this alloy, special care should be exercised to obtain a fair average sample. The sample for analysis should be in as fine a state of division as possible and preferably taken with a fine hacksaw. The sawings so produced should readily pass through a 40 mesh sieve. Any free iron should be removed by a magnet. Methods of analysis for copper and zinc, sulphur, arsenic, and tin are given.

The Right Use of Coal

To the Editor of The Chemical Age.

Sir,—The blame for the continued loss in the coal industry, as revealed in the latest returns, cannot be placed at the doors of the miners, for lower wages have actually been accompanied by increased output. The owners have had their solution, and it has solved nothing. The recommendations of the Samuel Commission for the better utilisation of our coal resources have been generally ignored, and the investigation of new methods is being left to chemists and engineers outside the mining industry. Low-temperature carbonisation, with its prospects of a smokeless domestic fuel and valuable oil and petroleum by-products, and the pulverised fuel system, as applied to factory and power-house boilers, and even more particularly to marine firing, are not receiving the support of the mine-owners, who seem to be unable to understand that their problem is more than waiting for improved prices for raw coal, produced on low wages.

We have recently inspected a pulverised fuel plant, using one of the new short flame burners, and we have difficulty in understanding why its possibilities have not evoked the active interest of the collieries. Using smalls and even low-grade fuels for which there is no other demand, it opens up a new market, and, with its application to marine firing, it promises to win back for coal a sphere that is otherwise finally lost to oil. Despite the immense promise of pulverised fuel and the low-temperature carbonisation process, the coal owners potter around blindfold, muttering about wages and markets. Unfortunately, the official world is no more helpful. The Admiralty is content to declare that it is watching pulverised fuel progress with interest, but it declines to undertake or facilitate experiments or trials. It depends on imported oil for naval fuel, and adds to its responsibilities the task of bringing oil to this country for the use of merchant ships in time of war, yet with this double burden on its shoulders it merely looks benevolently at the private engineer and his pulverised fuel plans.

The Fuel Research Board is certainly more active, but its operations are limited because of insufficient funds. Its usefulness could be increased by widening the scope of its own experimental work and in testing the work of others, and, by its reports and certificates, helping the public to discover which of the various systems and inventions hold the promise of success. By such work the Board would secure an effective concentration of public opinion, calculated to drive the mine-owners to action.—Yours faithfully,

W. Paling, M.P.
House of Commons, June 14. Tom Williams, M.P.

Institute of Metals Liverpool Meeting

The Liverpool Meeting of the Institute of Metals, to be held September 4–7, is proving very attractive. Already over 200 members—including many from overseas—have indicated their intention of taking part in the meeting. The papers to be presented include a valuable series dealing with the die-casting of alloys, as well as the Eighth Report of the Corrosion Research Committee. A " full-dress " discussion of corrosion problems will form a feature of the meeting. It is particularly appropriate that this discussion should take place in a maritime centre such as Liverpool. On the social side, the gathering promises to be a pleasant one ; a series of receptions, visits to places of interest, and other functions is being arranged by the local reception committee.

Work of the Kodak Research Laboratories

The eleventh volume (1927) of *Abridged Scientific Publications from the Kodak Research Laboratories* has been issued by the Eastman Kodak Co., of Rochester, New York. The papers given, numbering thirty-eight (pp. 232) are abridged forms of those already published in full in various scientific journals. Many of the papers deal with various aspects of the physics and chemistry of photography. On the purely chemical side the following may be noted : " The Mechanism of the Wurtz-Fittig Reaction," by W. E. Bachmann and H. T. Clarke ; " Addition Compounds of Allylthiorurea with Silver Halides," by S. E. Sheppard and H. Hudson ; and " The Lower Fatty Acids of Coconut Oil," by E. R. Taylor and H. T. Clarke.

Professional Prospects in Chemistry

By a Research Chemist

WITHIN the last few months there have been indications that the profession of chemistry is recovering from the unemployment which has burdened it during most of the post-war years. This is not evidenced merely by a slight decline in the percentage of members of the Institute of Chemistry unemployed, and by a similar decrease within the British Association of Chemists. It appears that at present there is a shortage of young qualified men and that at some, at any rate, of our universities and technical colleges, the demand for graduates exceeds the supply. This is due to the fact that the last few years have seen a great decrease in the number of students of chemistry, the post-war boom having definitely come to an end. It is to be hoped that in future the relation between supply and demand in the profession may be more or less effectively stabilised to avoid either acute shortage or overcrowding. Neither extreme is to the advantage, either of the profession or of the industries and Governments it serves.

Not the least interesting section of the recently issued report of the Imperial Agricultural Conference is that which deals with this point. The conference fully realised that for the scientific services to attract the best type of candidate, the demand for and absorption of such candidates must, as far as possible, be free from violent fluctuations from year to year. The suggestion of a "pool" in regard to scholarship schemes is one well worthy of consideration by the profession as well as by the industrialists, and by university and Government authorities to whom it is immediately addressed. One authority attributes the improvement in the prospects in the profession of chemistry, largely to the formation of Imperial Chemical Industries, Ltd., and a broad and enlightened policy pursued by a combine of this magnitude is bound to have a stimulating effect upon the position of the chemist in industry generally, as well as in Government services. The experience in Malaya, quoted by Mr. A. S. Haynes at the Imperial Agricultural Conference, is sufficient evidence that where one organisation pursues a generous and enlightened policy, others have to fall into line or be content with a lower class of candidate.

Incidence of Unemployment

While the position of the newly qualified chemist appears definitely superior to that of a year or two ago, there is also a dearth of men of undoubted first-class ability. The incidence of unemployment within the profession to-day falls mainly upon comparatively senior men of second-class or mediocre attainments. This is a position that calls for some consideration. The determining factor in attracting entrants to a profession is not always the existence of plums to be secured by men of outstanding ability, but the prospects offered to the average man of good ability. To-day, the whole call of industry is for team work—in research and elsewhere—and team work calls first for the ability to plod, for thoroughness, for loyalty and ability to co-operate with others, with all of which genius may or may not be associated. In research work at any rate, the stimulus of a spirit of research on the part of the worker is an essential. Without it, his work is not likely to be worth much; with it, the existence of a good pensions or superannuation scheme is not likely to have any deadening influence. If a pension scheme frees the research chemist from embarrassing anxieties concerning the future, it is much more likely to improve than to detract from the quality of his work.

While Major Elliott, at the conference, referred to the danger of a block in promotion, neither he nor the other speakers mentioned the point where the real danger of stagnation in research work exists. The development of scientific research may take place in two ways, either by an increase in the number of research workers, or by an advance in their standard of ability. At present, the tendency is for both factors to operate. What is not realised, however, is that the very call for team work, characteristic of modern industry, makes bigger demands upon the research worker, and at the same time decreases the prospects of promotion. The absolute number of positions of directors or managers of research and the like may increase; their number, relative to the number of investigators, decreases. All the more important is it, therefore, that the able research worker should find adequate recognition and status while engaged upon his investigations. To promote him to administrative or executive position in many cases is a loss. He is no longer engaged upon the work for which he is best fitted. Without the stimulus of recognition while engaged upon his research work, the research worker tends in time to become discouraged and to cease to give of his best. Equally, the absence of such stimulus must have a deleterious influence on the quality of the entrant attracted into the profession. There is no more deadening influence in industrial research work to-day than that of the departmental chief, who imposes rigid uniformity of salaries, and forces his research workers to seek promotion outside the sphere in which their zeal, energies and talents are best employed. As the report of the research special sub-committee of the Imperial Conference puts it:—"Special inducements offered at an early stage to tempt young men into a profession, cannot make up for inherent deficiencies in the prospects which that profession can provide in salary, pension, status and opportunities."

Anglo-German Potash Rumours

German Press Reports

PROMINENCE has recently been given in the German lay Press to rumours regarding an arrangement between the German potash industry and Imperial Chemical Industries. The statements made are conflicting. In some cases it is stated that I.C.I. was unable to conclude an agreement in regard to mixed fertilisers with the German Kali-Syndikat, owing to the fact that without the co-operation of the French, the Kali-Syndikat would not be in a position to meet such an agreement. One paper goes so far as to suggest that I.C.I. could obtain potash on good terms by renouncing the exploitation of the potash resources of the Dead Sea. Reference is made to the purchase by I.C.I. of an interest in an American potash company (presumably the Malagash Salt Co., of Nova Scotia, as reported in these columns last week). *Die Metallbörse* points out that the German potash producers cannot do otherwise than supply the British organisation with potash at acceptable prices, as they (the Germans) have not, in this type of transaction, the possibility of control which the German Potash Law puts in their hands in Germany, and which was used to render difficult the production of mixed fertilisers by the I.G. until an agreement was made. Even now, it is added, the I.G. has to communicate to the Kali-Syndikat the names of the countries for which the potash used is destined. *Die Metallbörse* therefore doubts whether the German potash producers have imposed on I.C.I. the conditions stated in the German Press. The journal adds that it is self-evident that the potash producers will see to it that, in regard to price, the mixed fertilisers do not compete with their own potash.

The *Kölnische Zeitung* refers to a joint arrangement between the German Stickstoffsyndikat and the French Kuhlmann concern for propaganda for the use of mixed fertilisers. A nominee of the Kali-Syndikat will join the Stickstoffsyndikat, and the Kuhlmann concern will also, later on, join in this exchange of personnel, presumably with the French State Potash Mines or the St. Thérèse mines.

The French potash industry did not enjoy great prosperity in 1927. The quantity exported went down to 190,000 tons of pure potash, as compared with 260,000 tons in 1926. Home sales dropped from 150,000 tons to 135,000 tons. Production was at about the same level as in 1926.

Homogeneous Lead Lining

W. J. FRASER AND CO., LTD., the old-established chemical plant manufacturers, of Dagenham, Essex, are, we are informed, now applying homogeneous lead lining by one of the most successful Continental processes. It is claimed that the method in use at Dagenham eliminates porosity, and that, owing to the permanent adhesion and high chemical resistivity of the deposit, plant so lined has the longest useful life. This last point is borne out by practical experience with the lining, which has been in use on the Continent for a number of years. We understand that Messrs. Fraser are already completing contracts secured for their new process, and that they are now in a position to make British chemical plant, on any scale, homogeneously lined in England with British lead.

The Concordia Linde Process for the Utilisation of Coke Oven Gas

By H. V. Horton, B.Sc.

For many years attempts have been made to prepare ethylene from coke oven gas with a view to its conversion into ethyl alcohol and other aliphatic compounds. With recent advances in the preparation of synthetic ammonia and in the hydrogenation of coal, coke oven gas has acquired a new importance. The percentages by volume of its most important constituents are as follows.

Hydrogen, 52 per cent.
Methane, 28 per cent.
Nitrogen, 8 per cent.

Ammonia, sulphuretted hydrogen, ethylene, oxygen, carbon monoxide and dioxide are also present.

The Ruhr Chemical Corporation, at their Concordia Colliery, have developed a process—the Concordia-Linde Process—for separating four chief products from the gas—hydrogen, methane, methane mixtures, and a mixture of hydrogen and nitrogen in the correct proportions for ammonia synthesis. It is possible to give only a brief account of the salient points in the process.

First Treatment of the Gas

The gas is first scrubbed to remove tar, benzene, ammonia, and sulphur compounds. It is then compressed to ten atmospheres and passed into a water spray tower to remove carbon dioxide. The wash water, on leaving the tower, returns about one-half of its energy to a water turbine. Scrubbing in caustic soda solution follows, sulphuretted hydrogen and the remaining carbon dioxide being thus absorbed. All substances with boiling points above 40° C. are next removed by pre-coolers working either as counter-current heat interchangers or on liquid nitrogen or ammonia. Each pre-cooler is in duplicate to permit of cleaning.

The mixture now consists of hydrogen, ethylene, methane, carbon monoxide, and nitrogen, together with higher olefines and paraffins. By lowering the temperature and increasing the pressure, separation into various fractions is possible. Hydrogen and methane are obtained in a comparatively pure state, while mixtures of all the gases in varying proportions are also produced. As the liquefaction pressure and temperature of a given mixture depend on the partial pressures of the constituents, analytical control is essential for obtaining the required mixtures.

For ammonia synthesis, a temperature of −196° C. at ten atmospheres pressure gives a nitrogen-hydrogen mixture in the ratio of one to three. This temperature is obtained by the evaporation of liquid nitrogen at one atmosphere pressure. For pure hydrogen the liquid nitrogen is evaporated in vacuo. The nitrogen-hydrogen mixture for ammonia is freed from carbon monoxide (a catalyst poison) by spraying with liquid nitrogen; this reduces the carbon monoxide content to less than 0·01 per cent.—a safe amount. The cold gases leave the cooling apparatus via the heat interchange, and are passed directly into storage cylinders, further pumping being unnecessary.

Use of Various Products

Mixtures of methane with other gases, *e.g.*, ethylene, are sold for autogenous welding, etc. Compressed methane has been found to be satisfactory as a motor fuel, and it seems possible that it may replace petrol in the case of heavy lorries operating within a reasonable distance of the source of supply. The weight of the cylinders precludes their use in light vehicles.

The hydrogen and the methane prepared by this process are particularly suitable for welding purposes owing to their freedom from the water vapour which is liable to be present in material which has been stored in gas holders over water.

Thus what has long been regarded as a waste product, suitable only for boiler and similar purposes, gives a new source of synthetic ammonia, a supply of welding gases, and two notable contributions to the automobile fuel problem—a supply of hydrogen for the liquefaction of coal by the Bergius process and a new motor fuel.

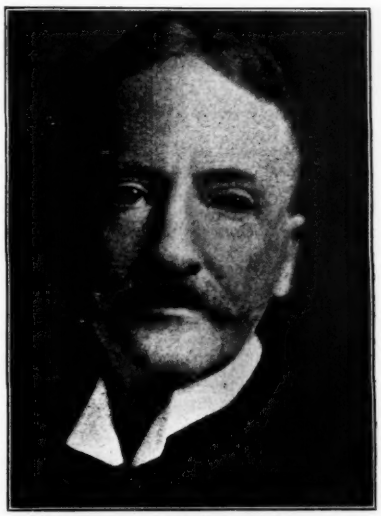
Acknowledgment is made to the *Chemisch-Metallurgische Zeitschrift* for much of the matter included in this article.

Identification of Bios I as Inosite

Important Results Reported in Canada

It is reported in the Canadian Press that in a paper read before the Royal Society of Canada, at Winnipeg, Dr. Edna V. Eastcott (one of the collaborators of Professor W. Lash Miller, of Toronto), announced that Bios I has been identified as inactive inosite. Inosite (inositol), $C_6H_6(OH)_6$, is hexahydroxycyclohexane. It is found in the muscles of the heart, in liver, and in various plants. It has the same empirical formula as the hexoses ($C_6H_{12}O_6$), which it also resembles in having a sweet taste. Of the nine theoretically possible stereoisomers, two are mirror-image structures without a plane of symmetry, and are hence optically active. These two active forms are of interest as the first-known optically active substances containing no asymmetric atom. In addition to the active form, a racemic form and an inactive meso-form are known.

Bios is a substance believed to be necessary for the growth of yeast. For some years past, a number of workers at Toronto University, under the direction of Professor W. Lash



Professor W. Lash Miller.

Miller, have been engaged on the investigation of the nature of Bios. As early as December, 1923, speaking before Section C of the American Association for the Advancement of Science, Professor Miller clearly defined the existence of "Bios I" and "Bios II." He gave methods for their separation. He demonstrated that while a given list of plant products containing Bios might also show vitamin B, they were not identical, and in fact Bios did not cure pigeons suffering from a lack of vitamin B. Very shortly after this, in February, 1924, the fractionation of Bios II was announced.

Experiments with inosite are said to have shown that it can be taken up by yeast from the culture medium and can be quantitatively recovered by hydrolysing the yeast crop. Yeast grown in a solution containing sugar and salts only also yields inosite on hydrolysis but in less amount. In this work the quantities of Bios I, or inosite, and Bios II in many food products have been determined and are reported in work presented to the Royal Society of Canada. This research is claimed to show for the first time the specific significance of inosite in plants, and to demonstrate that this substance, when in conjunction with others still unidentified as Bios II, has a most remarkable place to fill in the normal reproduction of yeast.

International Congress of Photography

The seventh International Congress of Photography will be held in London from July 9 to 14 under the auspices of the Royal Photographic Society. There will be a scientific and technical section dealing with the theoretical aspects of photography and its scientific and industrial applications, a bibliographical section, and a pictorial section. Exhibitions in connection with the two former sections will be held at the Imperial College of Science, South Kensington.

Indian Chemical Notes

[From Our Indian Correspondent.]

A small quantity of rectified spirit is manufactured in the Bombay Presidency, while the bulk of India's consumption is imported from Java and the European countries. The Director of Industries, Bombay, had been for the last two years carrying out investigations into the prospects of the manufacture of alcohol on a commercial scale, and, according to his conclusions, contained in his report for the last year, there is a vast field, combined with almost unlimited facilities, for manufacturing alcohol in that Presidency. The raw material, mhowa or mhowra flowers, from which alcohol is made, grows wild and in abundance in some parts. Mhowra flowers are used for spirit and the seeds for oil for making soap.

Kapok Oil

The investigation of kapok oil, says the industrial chemist of Travancore in his latest report of the activities of his department, was continued during last year. Solid fatty acids with an iodine value as low as 1·104 were obtained, which meant that the amount of liquid acids present in the isolated sample was negligible. There was a persistent brown tint in the oil which could not be got rid of. This was due to the shell pigment, which got dissolved during the extraction. The fatty acids were also similarly tinted, and recourse to partial formation of a lead soap left the unacted acids free of colour. The commercial value of kapok oil lies in its use as a raw material for the manufacture of soap. The oil will be nearly colourless if the seeds are decorticated before expression. Closely allied to this is the oil from the seeds of *Bombax Malabaricum*, known as the Indian kapok. The yield and constants of this oil lie very close to those of kapok oil. Analysis of the oil cake showed that it can be used as a nutrient cattle food. The oil, when allowed to stand for a considerable time, deposits a hard stearine, which once formed remains solid, even in the hottest weather. The sample of oil obtained by solvent extraction exhibited hydrolysis to the extent of 70 per cent. to 80 per cent., which is rather an unusual occurrence. Generally, the free fatty acid content of oils under similar circumstances ranges only from 10 to 20 per cent.

Artificial Manures in Madras

The Agricultural Department in Madras has been carrying out experiments on manures for some time past at its Coimbatore farm, and results thereof are published from time to time. The latest conclusions reached are as follows:—Organic manure is used fundamentally for the purpose of maintaining the physical and mechanical texture of the soil, while artificial fertilisers chiefly supply any deficiency in the soluble mineral contents of the soil. To gain the maximum yield, stable farmyard manure or any other organic material must be used in combination with artificial fertilisers. Fertility of a soil depends largely on its physical condition. For it is the latter which regulates the supply of air and water to the plant and incidentally the bacterial life that teems in the surface soil.

Referring to these conclusions, the Department reports that as stable and farmyard manure are becoming increasingly difficult to obtain every year, artificial fertilisers can be obtained without any difficulty and at a comparatively cheap price and very well applied to the soil to produce excellent results.

Wattle Bark Cultivation

The supply of wattle bark for tanning purposes is a question of considerable importance, and it is interesting to know that the efforts made by Mr. Parry to cultivate wattle bark in the Nilgiris in the Madras Presidency have met with great success. Mr. Parry's first efforts on the coast were not successful, but at the higher elevation his success has been proved. He has also fitted up plant for drying, chopping, and preparing the bark, and his plant is now capable of dealing with 72,000 lb. of bark daily. Proposals are under consideration to encourage Mr. Parry's efforts to produce wattle bark in large quantities by Government aid.

Burma Chemicals

Burma Chemical Industries, Ltd., passed another year of good progress in 1927. During the year the output of acid was by far the largest since the inception of the company, and the plant has been worked almost to breaking point in order to cope with the demand. The directors decided early in the year on a scheme of extensions and additions to the existing plant, which are now practically completed and will be shortly in operation, and it is stated that when everything has been finished the works will form one of the most complete and up-to-date plants of the type to be found anywhere.

Pyrites in Madras

In the North Arcot district, in the Madras Presidency, about ten miles from the railway station, a deposit of decomposed iron sulphide has been found. The pyrites is associated with a pegmatite. The pits show a gossan cap of limonite with the decomposed pyrites below. Microscopic examination shows that some of the hypersthene of the charnokite has been changed into opal, and some of the pyrites has a concentric appearance due to deposition by water.

S. G. W.

India's Chemical Trade

Surveys of various aspects of India's trade have recently been issued by the Department of Overseas Trade. In the first quarter of the year 1926-7 (April 1 to June 30) there was a further increase in imports.

The imports of soap rose from Rs. 37 to Rs. 41 lakhs, owing to increased importations of household and laundry soap. The United Kingdom more than held its position and British shipments rose from Rs. 34 to Rs. 38 lakhs.

Province of Sind

In a survey of the maritime trade of the Province of Sind for the official year 1926-27 it is indicated that imports of chemicals, drugs and medicines increased by Rs. 3½ lakhs to Rs. 36¾ lakhs, the United Kingdom being as usual the principal supplier, especially of heavy chemicals. A better demand from the Punjab caused the increase, the chief importations participating therein being soda ash and crystals valued at Rs. 10½ lakhs, caustic soda Rs. 4 lakhs, alum Rs. 1½ lakhs, and proprietary and patent medicines valued at Rs. 3¾ lakhs. Receipts of bicarbonate of soda suffered a further set-back from Rs. 1½ lakhs to Rs. 98,000, which is accounted for by the fact that carbon dioxide gas manufactured in India has been found to be a profitable substitute for this article in the manufacture of aerated waters.

In the same report it is indicated that the foreign import trade of Karachi during the year 1926-27 included: chemicals and chemical preparations, Rs. 24,79,968; paints and painters' materials, Rs. 11,43,178; drugs and medicines, Rs. 10,73,970; dyeing and tanning substances, Rs. 6,26,212.

The Madras Presidency

There is also a summary of the review by the collector of Customs, Madras, of the sea-borne trade of the Madras Presidency during the fiscal year 1926-27. The imports included: metals and ores, Rs. 2,45,84,425, an increase of Rs. 10,57,480; dyeing and tanning substances, Rs. 39,62,150, an increase of Rs. 12,73,520; chemicals and chemical preparations, Rs. 27,20,769, an increase of Rs. 1,21,226; drugs and medicines, Rs. 27,11,365; an increase of Rs. 3,85,741, paints and painters' materials, Rs. 11,56,164, an increase of Rs. 1,47,540; manures, Rs. 10,20,985, an increase of 3,01,433.

As regards chemicals, drugs and medicines, out of a total import of Rs. 27.21 lakhs, an increase of Rs. 1.21 lakhs, the United Kingdom supplied Rs. 19.12 lakhs, and Germany Rs. 3.46 lakhs. Imports of drugs and medicines rose from Rs. 23.26 lakhs to Rs. 27.11 lakhs, and of proprietary and patent medicines from Rs. 2 lakhs to Rs. 2.34 lakhs, of which latter total the United Kingdom supplied Rs. 1.09 lakhs.

Imports of dyeing and tanning substances increased from Rs. 26.89 lakhs to Rs. 39.62 lakhs. The imports of alizarine dyes increased from 702,810 lb., valued at Rs. 6.86 lakhs, to 1,322,404 lb., valued at Rs. 9.96 lakhs. There were also increased imports of aniline dyes, from 718,884 lb., valued at Rs. 12.71 lakhs, to 934,813 lb., valued at Rs. 16.62 lakhs. The United Kingdom supplied 254,800 lb. of alizarine dyes and 43,236 lb. of aniline dyes. The United Kingdom's share of the trade in paints and painters' materials, which rose from Rs. 10.09 lakhs to Rs. 11.56 lakhs, was Rs. 9.49 lakhs, or 82 per cent. The value of soap imported rose from Rs. 16.49 lakhs to Rs. 19.56 lakhs as a result of larger arrivals of household and toilet soaps from the United Kingdom (Rs. 16.77 lakhs, as against Rs. 14.38 lakhs in the previous year).

Surface Aeration Sewage Process

Plant Visited by Institute of Chemistry

THE Bristol and South Western Counties Section of the Institute of Chemistry opened its session with a visit on Saturday, June 16, to the sewage disposal works of the Exeter City Council, at Wonford. The party was received at the works by the City Engineer, Mr. Thomas Moulding; and Mr. Ames, of Ames Crosta Mills and Co., Ltd., of Nottingham, who designed and equipped the works, described and explained the system employed in the disposal of sewage.

The "Simplex" Process

The method adopted is known as the "Simplex" Surface Aeration Process, and the small experimental plant in operation at the works is on the activated sludge principle. It has the settling areas arranged in the corners of the aerating tanks to give an automatic return of the sludge. This design has proved very satisfactory in operation, and the effluent has been uniformly good, but experience at other works has shown that separate settling tanks are preferable, as this enables the excess sludge to be removed without stopping the plant for short periods for settlement.

The design, with separate settling tanks, has now been selected by the company as a standard, and any future extensions of the process which may be carried out at Exeter, where the plant has been in operation for upwards of two years, will be on this principle.

The construction and equipment of the "Simplex" plant is briefly as follows:—Tanks of suitable size are installed, the bottoms being coned to convey the sludge automatically to the centre, where a tube with a bell-shaped bottom is fixed and supported a short distance from the bottom of the tank, the top of the tube terminating in a dish, the outer edge of which is raised about half-an-inch above the top water level. This dish is fitted with vanes and connected to the tube by an air-lock joint. The dish is suspended by means of a vertical shaft running on ball bearings, rotated by shafting and bevel wheels. When the cone revolves, the liquid is thrown out in the form of film wave on the surface, and the liquid and sludge then rise from the bottom up to the tube to replace the liquid thrown out by the revolving cone.

Surface Aeration

The agitation and exposure to the atmosphere brought about by this circulating operation supplies, by surface aeration, the necessary amount of oxygen required for purification purposes. The operation and mechanism is of the simplest character, and the cost of running maintenance and attention is consequently extremely low. The plant is now dealing with 75,000 gallons per day, dry weather flow. The greatest number of units used per day for running the plant is 43·5, and the cost three halfpence per unit.

The chairman of the Section, Mr. Edward Russell, B.Sc., F.I.C. (Bristol City Analyst), expressed on behalf of the members cordial thanks to Mr. Moulding and Mr. Ames, and said that the visit had been most interesting and profitable.

The party next inspected the chemical laboratories at the Exeter University College, where they were welcomed by Dr. S. Glasstone, F.I.C., in the unavoidable absence of Principal Murray, and were entertained to tea by the College authorities. They also visted Reed Hall and the site of the new University buildings. The certificate of the Association was presented by the chairman to Dr. A. V. Pitter (Bristol), on his admission to the Institute.

Those who took part in the meeting included Messrs. C. G. Gates, B.Sc., F.I.C. (Exeter), R. R. Butler, M.Sc., A.I.C. (Plymouth), A. H. Mitchell, B.Sc., F.I.C. (Tiverton Borough Analyst), Dr. G. Barker, M.Sc., A.I.C. (Wellington), Miss W. Lewis, B.Sc. (Lapford), Dr. T. Malkin, A.I.C. (Bristol University), Messrs. A. C. Chapman (Taunton), R. D. Littlefield, F.I.C., F. H. Barke, F.I.C., F. E. Needs, A.I.C., F. F. Beach, M.A., B.Sc., F.I.C., E. Lewis, F.I.C., F. O'Brien, M.Sc., F.I.C., and A. W. M. Wintle, F.I.C. (Bristol).

Lord Weir Appointed to Board of I.C.I.

LORD WEIR HAS BEEN APPOINTED a director of Imperial Chemical Industries, Ltd. Lord Weir, who is managing director of G. and J. Weir, Ltd., Glasgow, was Scottish Director of Munitions, 1915–1916, Controller of Aeronautical Supplies and a member of the Air Board, 1917–1918, and Director-General of Aircraft Production, 1918.

A Bookman's Column

ULLMANN'S *Enzyklopädie der Technischen Chemie* has enjoyed considerable popularity in German-speaking countries. The suggestion has been made that an English edition of this work of reference might be of value, and possibly a translation may be undertaken, the statistical and economic information being revised and added to, so as to give British and American, as well as German, figures.

* * *

A SECOND (revised and enlarged) edition of *The Chemical Effects of Alpha Particles and Electrons*, by Dr. S. C. Lind, has been published (American Chemical Society Monograph Series. New York: The Chemical Catalog Co., pp. 252, $5). The progress of the study of radiochemical effects since 1921 has necessitated a complete revision and the addition of seven new chapters. The changes consist mainly of the expansion of the principles enunciated in the first edition rather than in their radical alteration.

* * *

The literature of colloids threatens to outdo that of all other departments of science in speed of growth. Two publications have recently come to hand. Chapman and Hall have published a second edition, revised and enlarged, of Professor H. N. Holmes's *Laboratory Manual of Colloid Chemistry* (pp. 228, 15s.). New material has been added on electrodialysis, ultrafiltration, sedimentation, surface tension, gels, viscosity and plasticity, adsorption, and soils, while entire new chapters have been added on froths and films; the colloid chemistry of proteins; and aerosols. As the author points out, so much theory has been interspersed between the experiments that the manual is now almost a text-book as well.

* * *

The other book on colloids is the *Colloid Symposium Monograph*, being the papers presented at the fifth national (U.S.) symposium on colloid chemistry, at the University of Michigan, in June, 1927, edited by Professor H.B. Weiser (The Chemical Catalog Co., pp. 394, $6.50.) The papers number twenty-four, the contributors including Professor H. R. Kruyt (of the University of Utrecht), Professor W. D. Harkins, Professor W. D. Bancroft, and Dr. S. E. Sheppard, among many others; while the subjects range over the whole vast and complicated field now included under the heading of colloid chemistry. This year's colloid symposium (the sixth) is being held in Toronto.

* * *

A volume entitled *The Modern Calorimeter*, written by Dr. W. P. White, of the Geophysical Laboratory of the Carnegie Institute of Washington, has just appeared in the American Chemical Society Monograph Series (New York: The Chemical Catalog Co., pp. 194, $4). The processes of calorimetry depend on temperature distributions and heat flows, things hard to measure or control with exactness. Calorimetric methods and our understanding of them have both been improved by the recent work of Richards, Dickinson, Barry, Dr. White himself, and others, and in the volume now published a unified account of this recent progress is given.

* * *

The chemical and other effects of various forms of radiation are, at the moment, arousing a great deal of interest, and have latterly received a novel application in industrial chemistry in the production of vitamin D by the irradiation of ergosterol with ultra-violet light. Papers on photochemistry are appearing in increasing numbers, and there has also been a great extension of the use of actinotherapy, although the exaggerated claims made for the latter in some circles may lead to a reaction. Messrs. Baillière, Tindall and Cox are to be congratulated on their enterprise in publishing, in their Industrial Chemistry Series, *Radiation in Chemistry*, by R. Alan Morton, of the University of Liverpool (pp. 284, 15s.) Dr. Morton's work, with Professor Heilbron and others, on the production of vitamin D makes it peculiarly fitting that he should be the author of this book. The subject is dealt with under the following heads: The laws of photochemistry; light sources; measurement of light intensity; photochemical reactions; the photographic and allied industries; photoelectricity and luminescence; biochemistry and light; and X-rays in chemical theory and practice.

Fuel Research

Physical and Chemical Survey of Coal Resources

In connection with the physical and chemical survey of the national coal resources, which is one of the important aspects of the fuel research work of the Department of Scientific and Industrial Research, the Department has recently appointed a committee to deal with the South Wales coalfield, with the following constitution:—Representing the Monmouthshire and South Wales Coal Owners' Association, Messrs. A. G. Brown, D. F. Davies, R. Gibb (junr.), and W. D. Woolley. Representing the South Wales Institute of Engineers, Mr. W. O'Connor. Representing the Geological Survey of Great Britain, Dr. T. Robertson. Representing the Department of Scientific and Industrial Research, Dr. C. H. Lander, Director of Fuel Research (*ex officio*), and Dr. F. S. Sinnatt, Superintendent of the Physical and Chemical Survey of the National Coal Resources (*ex officio*). Committees are already actively at work in the following areas:—Durham and Northumberland, Lancashire and Cheshire, South Yorkshire, Nottinghamshire and Derbyshire, North Staffordshire and in Scotland.

The object of the survey is to investigate the characteristics of the various coal seams in the country with a view to their utilisation to the best advantage. Local laboratories are established in each area for the examination of samples and, when necessary, large scale investigations are carried out at H. M. Fuel Research Station or elsewhere. The work of each committee is to advise as to which seams should be investigated, to recommend what large scale work should be undertaken, and to bring to the Department's notice any problems of peculiar local interest which may require investigation.

Visit of the American Ceramic Society

A party of members of the American Ceramic Society were due to arrive in London on Thursday, and will leave England on June 30. The visitors have come at the joint invitation of the Ceramic Society and the Society of Glass Technology. Among the arrangements made for entertaining the visitors are a reception and banquet in London, and receptions and dinners in the provinces. In addition, an extensive programme of visits to various works has been arranged, including visits to the following: The London Brick Co. and Forders, Ltd.; the United Glass Bottle Manufacturers, Ltd.; the General Electric Co.'s research laboratories and glass works; China Clay mines in Cornwall; the Royal Worcester Potteries; glass, fireclay refractories, and other works in the Pottery district; the Derbyshire Silica Co., Ltd.; the British Thomson-Houston Co., Ltd.'s glass works; Wood Bros. Glass Co., Ltd.; and the Leeds Fireclay Co., Ltd. During the visit to the Potteries, the party will attend a reception by Dr. J. W. Mellor, F.R.S., at his laboratories at the North Staffordshire Technical College, Stoke-on-Trent, on Wednesday, June 27. On the same day the visitors will be entertained to lunch by the Ceramic Society, and to dinner by the British Pottery Manufacturers' Association. On Thursday, June 28, the party will reach Sheffield, will visit the Department of Glass Technology of the University, and will be entertained to dinner by the Society of Glass Technology and the Refractories Association. On Friday, June 29, the Leeds University Fuel Department will be visited. Excursions will be made to Hampton Court, Stratford-on-Avon, Haddon Hall, etc.

British Science Guild Report

The British Science Guild has just published the annual report of its executive committee for 1927–8 (pp. 24, 1s.), which was presented at the annual meeting, held on Thursday in the Hall of the Royal Society of Arts, London, the president, Lord Melchett (chairman of Imperial Chemical Industries, Ltd.), being in the chair. Among the matters discussed in the report are the desirability of reform in the Patent Law; the position of science teaching in public elementary schools; and the position of the technical expert in the public service and in industry. In addition, special notes are given on recent developments of the application of science to national life, including the application of science in agriculture, the formation and organisation of Imperial Chemical Industries, Ltd., the irradiation of ergosterol, etc. The address of the Guild is 6, John Street, Adelphi, London.

Case Before Mixed Arbitral Tribunal

Claim by Bradford Dyers' Association

At Thursday's sitting of a division of the Anglo-German Mixed Arbitral Tribunal—the Court comprising Dr. Klaestad, the neutral President, Dr. Heber Hart, K.C., British member, and Dr. Johannes, German member,—there was heard a claim which had been brought by the Bradford Dyers' Association against S. H. Sharp and Sons, G. m.b.H., of Kingersheim, Alsace, who carried on the business of dyers and finishers. The claim was for £30,964 which had been invested by the trustee appointed by the German Government during the war, and claimants also asked for compensation, to be assessed by the Tribunal respecting the application by the German Government of exceptional war measures.

Mr. Schiller, K.C., with Mr. Somervell, was for claimants, and Dr. Albrecht represented respondents and the German Clearing Office.

Defendant Company Controlled from Bradford

Mr. Schiller, in outlining the case, said the claimants had large interests in Germany, and they owned all the shares in the respondent company, so in substance it was the Bradford Dyers' Association. Sharp and Sons were practically managed by and controlled from Bradford, all the directors, with the exception of one, being gentlemen who were resident in the United Kingdom.

During the war the German company was placed under compulsory German management, and much of its money, due to the English company, was invested in German war loan; and by the early part of 1917 the activities of the German company were compulsorily brought to a close because the military authorities had expropriated the greater proportion of their motors, copper cylinders, and so on.

Mr. Schiller, having admitted that, under German law, all that might have been the proper thing to do, proceeded to argue the matter from what he regarded as the point of view of the Treaty of Versailles and the responsibility of the German Government.

The Tribunal eventually reserved its decision.

Jubilee of W. H. Willcox and Co.

The numerous trade friends of W. H. Willcox and Co., Ltd., the well-known firm of Southwark, London, will be interested to learn that on June 11 it attained its jubilee, having completed fifty years' of service to the engineering, agricultural, motor and allied trades. Mr. Walter Henry Willcox started the business in 1878 with a small staff in Upper Thames Street, some of the original employees being still in the service of the firm. He was joined later in partnership by Mr. William Cordrey, at 36, Southwark Street, and by a far-sighted policy and progressive methods they built up the business the name of which has become a household word wherever engineers' stores, lubricants, hose, beltings, tools and sundries are used. Starting from a small warehouse, the premises of W. H. Willcox and Co., Ltd., now comprise no less than eight large buildings. Their offices, warehouses, pump works and shop are situated at 34 to 38, Southwark Street, London; No. 32, Southwark Street houses the leather belting factory and export department. They have their oil and grease refineries and stores at Castle Street and Worcester Street, while the well-known Jones-Willcox patent wirebound (non-rubber) hose is manufactured in their large factories at Canvey Street and Zoar Street, Southwark. The tradition of efficient methods and fair straightforward dealing, inculcated by the founders of the firm, is ably carried on by the present board of directors, and does much to explain the esteem and confidence in which Willcox's are held throughout their wide field of activities.

New Explosives Plant in Canada

Construction of an explosives plant near Winnipeg at a cost of approximately $1,000,000 is planned by Canadian Industries, Ltd. The Manitoba plant, which will be the first to be operated in the middle western field by the firm, will serve the mining fields of Western Canada. The company controls six of the largest chemical industries in Canada, and is affiliated with Imperial Chemical Industries, Ltd., in Great Britain, and with the Dupont Co. in the United States. Extension of the company's holdings in Manitoba will be the first step in a general programme to serve Western Canada.

British Industries Fair

40 Per Cent. Increase of Stands for 1929

In a letter sent to British manufacturers on Monday, enclosing application forms for space in the London Section of the British Industries Fair, 1929, the Department of Overseas Trade states that owing to the success of the last Fair (which was a record for space let, the number of exhibitors, and the number of overseas buyers), it has been found necessary to provide an extra hall giving 100,000 square feet of stand space, in addition to the 250,000 square feet of stands occupied at the last Fair—roughly a 40 per cent. increase. It is further stated that provisional applications for space at the White City amount to two-thirds of the total new stand area, so that intending exhibitors are advised not to delay their applications.

In Birmingham, the increase of space will bring the exhibition area to about 250,000 square feet, making a total area for both sections of the Fair of over 600,000 square feet.

It is expected that there will again be a full representation in the Empire Marketing Board section at the White City of the Dominions and Colonies, with the addition, probably, of the one big Dominion which has not participated so far—Canada. "I have every reason to believe that the 1929 Fair will eclipse even the record of the last Fair," Mr. Douglas Hacking, M.P., Parliamentary Secretary to the Department of Overseas Trade states: "We are again enlisting the help of our overseas officers to make the Fair still more widely known in all countries abroad, and we are again spending £25,000 in advertising."

The Fair will be opened as usual on the third Monday of February (the 18th), and will end on the Friday of the following week (March 1st). Public interest at the White City was so great this year, that it has been decided to open the next Fair to the public at four o'clock instead of at five each evening.

Society of Chemical Industry Nominations

The annual general meeting of the Society of Chemical Industry will be held in New York on Tuesday, September 4, 1928, at 11 a.m. The following members of the council retire from their respective offices at the close of the forthcoming annual general meeting:—Mr. F. Carr, President; Dr. W. R. Hodgkinson, Dr. A. E. Macintyre, Sir William J. Pope, F.R.S., and Mr. E. Thompson, Vice-Presidents; Mr. J. Allan, Mr. J. L. Baker, Professor C. S. Gibson, and Dr. H. H. Morgan, ordinary members. Mr. A. D. Little has been nominated for election to the office of President; Sir Edward A. Brotherton, Mr. F. H. Carr, Mr. A. E. MacRae, and Professor J. C. Phillip, F.R.S., have been nominated Vice-Presidents. Dr. E. W. Smith has been re-elected Honorary Treasurer, and Dr. E. F. Armstrong, F.R.S., Honorary Foreign Secretary. Dr. T. Callan, Mr. W. H. Coleman, Dr. W. Cullen, Professor F. G. Donnan, F.R.S., Mr. F. A. Greene, Mr. J. A. Reavell and Mr. S. J. Tungay have been nominated to fill four vacancies among the ordinary members of the council.

Port Rates on Formaldehyde

The Port of London Authority, after negotiations with the Chemical and Dyestuffs Traders' Association, have reduced their Port Rates on Formaldehyde, as follows:—

Foreign.			Coastwise.
Inward.	Outward.	Inward.	Outward.
2s.	1s.	1s.	6d. per ton.

The fifth annual general meeting of the Association will be held in London on Thursday, June 28, at 2.30 p.m.

Fertilisers and Feeding Stuffs Act

The Minister of Agriculture and Fisheries and the Board of Agriculture for Scotland, in exercise of the powers conferred on them by Sub-section 2 of Section 30 of the Fertilisers and Feeding Stuffs Act, 1926, have jointly issued an order dated May 30, appointing the first day of July, 1928, as the day on which the Fertilisers and Feeding Stuffs Act, 1926, shall come into operation.

Chemical Merchant's Affairs

On Monday, at Bankruptcy Buildings, Carey Street, London, W.C., the statutory first meeting of creditors of Wilfred Smith, chemical merchant and agent, of 37, Great Tower Street, London, was held under a receiving order recently made against the estate of this debtor. His statement of affairs disclosed gross liabilities £9,859, of which £4,009 was unsecured. His assets were estimated to produce £30, apart from a claim against the petitioning creditors (United Premier Oil and Cake Co., Ltd.). The receiving order was made on May 24, and it appeared from the debtor's statements in preliminary examination that he entered his father's business of a chemical manufacturer about 24 years ago, and in 1918 he was taken into partnership. Six months later the business was converted into a company styled Alfred Smith, Ltd., with a nominal capital of £80,000. He was appointed a director and held shares to the value of £15,000, which was about one-third of the paid-up capital of £45,000 taken up and held by members of the family.

In 1919 they were approached by the petitioners with a view to purchasing the whole of their holding at a valuation which came out practically at par. The purchase consideration was received partly in cash and partly in shares of the United Premier Oil and Cake Co., Ltd. The debtor stated that the shares were issued to him and his family on condition that they were held as an investment and not a speculation. He acted as a director of the United Premier Oil and Cake Co., Ltd., until August, 1921, when he lost the position. That was followed by a series of actions and the petitioning creditors claim in this bankruptcy (£693) was in respect of taxed costs of one of the number. The debtor contended that he and his brother had a joint claim to £9,600 due to them as a result of the sale of their business to the United Premier Oil and Cake Co., Ltd.

After leaving that company the debtor was in partnership with a general merchant until 1924; the partnership was then dissolved and he had since carried on business as a chemical merchant and agent at 37, Great Tower Street, London. In March, 1927, he transferred that business to Wilfred Smith, Ltd., formed with a nominal capital of £1,000; as vendor he was allotted 100 shares of £1 each and appointed managing director. The company took over the liabilities and the assets of the business and he had charged his shares. He did not admit insolvency, having regard to the claim against the petitioning creditors. The estate was left in the hands of the Official Receiver for administration.

Nipah Distilleries of Malaya

The subscription lists were opened on Tuesday in connection with the issue at par of 610,000 shares of 5s. each in the Nipah Distilleries of Malaya. The object of the undertaking is to carry on the business of manufacturers and distillers of power alcohol and other products from nipah palms, and in this connection estates comprising about 2,250 acres are to be acquired, of which about 1,840 acres are planted with these palms. The F.M.S. Government is sympathetically interested in the whole project, and has agreed to subscribe at par for 20,000 of the shares now offered. From reports on the scheme contained in the prospectus, it appears that the production of alcohol from the juice of the nipah palm presents no difficulties, and also that alcohol and other products can be manufactured on a commercial basis. The reports indicate that a first-class motor fuel can be made and used in place of petrol without any alteration or adjustment of existing engines, and that similar fuels have been in use for a number of years and have proved successful in various countries. The directors are satisfied that a ready market is available in British Malaya for the whole output of alcohol in its various forms, and the fact that extensive local markets exist for other products besides motor fuel is expected to result in profits largely in excess of the estimate which appears in the prospectus. The Distillers Company is acting as technical adviser to the company, the arrangement being an exclusive one. Of the purchase price, amounting to £90,000, a sum of £60,000 is being satisfied in shares. Among the directors of the company is Dr. W. R. Ormandy, consulting chemist to the Distillers Company,

Chemical Matters in Parliament

Beet Sugar Factories' Capital

In reply to a question by Mr. Montague (House of Commons, June 7) as to the proportion of British capital issued to beet sugar factories in this country, Mr. Guinness stated that the total capital, including debentures, of the factories in operation last season was about £7,830,000 of which £1,725,000 was believed to be foreign. Mr. Thurtle asked whether all the foreign capital would derive benefit under the new rating proposals suggested by the Government, and was informed that any factory which conformed with the conditions would benefit and it was quite proper that it should benefit.

Manufacture of Phosgene in Germany

In reply to Sir W. Davison (House of Commons, June 11), Mr. Locker-Lampson stated that the obligations assumed by the German Government under the Treaty of Versailles, in respect to the manufacture and storage of chemicals utilisable as poison gas, had been defined by agreement in subsequent correspondence between the ex-Allied Powers and that Government. In substance, the situation resulting from these documents as regards phosgene was that the manufacture, storage, sale, import and export of phosgene intended for war purposes was forbidden. The manufacture of phosgene intended for industrial purposes was allowed, but was confined to three factories, and the machinery for producing the gas in each of these factories was limited so as to fix the total maximum output at nine tons a day. No restriction was placed upon the export or storage of phosgene so produced for industrial purposes. The facts hitherto brought to light afforded no proof that the German Government had failed to ensure the observance of the conditions described, and His Majesty's Government did not consider that any action on their part was required.

Dead Sea Salts Concession

Col. Howard-Bury (House of Commons, June 11) asked the Secretary of State for the Colonies whether, with regard to the Dead Sea, the concessionnaires were to be left free to obtain and make use of any labour of any nationality, or were they to be restricted to any one nationality. In reply Mr. Amery stated that provisions to be inserted in the concession could not be made public before the concession was granted. He had no reason to believe that only Jewish labour was to be employed by the concessionnaires.

In reply to questions by Sir Frederick Hall, Mr. Amery stated that he was advised that the present financial supporters of Messrs. Tulloch and Novomeysky commanded the capital necessary for the development of the undertaking for several years after it had commenced production on a commercial scale.

Dyestuffs: Inks

Mr. G. Thorne (House of Commons, June 12) asked the President of the Board of Trade whether he was aware that members of the engineering trades were complaining that they were now unable to secure supplies of Indian inks previously available; that supplies of ink manufactured in America with dyes purchased from British dye manufacturers were refused import into this country; and that supplies were now lying at the docks and had been for months; and whether he would remove the prohibition at present obtaining on such imports.

In his reply Sir P. Cunliffe Lister stated he had not received any representations regarding Indian ink, which material did not come within the scope of any import prohibition. The import of coloured drawing inks which were synthetic organic dyestuffs colours or colouring matters, was prohibited under the Dyestuffs (Import Regulation) Act, 1920.

Chemical Warfare

Major-General Sir Robert Hutchinson (House of Commons, June 14) asked the Prime Minister, in view of the recommendations of the League of Nations Disarmament Commission that all subsidies both to private and official laboratories promoting research in poison gases be abolished, whether he could say which nations had adopted these recommendations; what action the British Government had taken; whether any subsidies were now being paid to manufacturers of poison gases and bacteria; and, if so, to whom these subsidies were being paid and the amount in each case.

Mr. Baldwin, in reply, stated that certain clauses in regard to chemical warfare were included in the text of the draft convention drawn up by the Preparatory Commission for the Disarmament Conference at its third session, but they had not yet come forward for discussion on the Preparatory Commission. The answer to the third part of the question was in the negative.

Sulphur Dioxide in Milling Barley

In reply to a question by Mr. Westwood (House of Commons, June 14) Mr. Chamberlain stated that he had received a communication from James Proctor and Sons, Ltd., barley millers of Liverpool, offering documentary evidence that the Ministry of Health (Food Preservatives) Regulations, in their application to the use of sulphur dioxide in the bleaching and preserving of barley, had completely stopped their trade, and that their previous buyers have placed their orders with foreign firms. He was aware that the use of sulphur dioxide in the milling of barley was at present permitted in Germany and the United States of America, but he had no information to show that the prohibition of its use in those countries was attempted and abandoned because it was impracticable. The fact that exporters of barley to this country were able to comply with our regulations scarcely bore out that suggestion.

Distilled Spirits

In answer to Captain Craig (House of Commons, June 14) Mr. Churchill gave detailed statistics as to home produced proof spirits distilled during the year ended March 31, 1928, in England, Scotland, and Northern Ireland. 12,391,868 proof gallons were produced in England and Northern Ireland, and 18,988,437 proof gallons in Scotland. In arts and manufactures 756,852 proof gallons were used, and 9,135,515 proof gallons methylated. With regard to imported spirits Mr. Churchill stated that 597,801 proof gallons were used for methylation, 884,628 proof gallons for arts and manufactures, and other unenumerated spirits, including those used in perfumes, soaps and varnish, were imported to the extent of 234,796 liquid gallons.

"C.A." Queries

We receive so many inquiries from readers as to technical, industrial, and other points, that we have decided to make a selection for publication. In cases where the answers are of general interest, they will be published; in others, the answers will simply be passed on to the inquirers. Readers are invited to supply information on the subjects of the queries :—

103.—*Iron Pyrites.*—An Indian Government Department is anxious to obtain some information on the following points regarding iron pyrites :—

(1) Price per ton delivered at any of the English ports.

(2) The basis on which the price is fixed. Is it on the percentage of sulphur content in the ore ?

(3) If it is to be imported from Spain or any other country, the price per ton f.o.b. the nearest port may be given.

(4) Are the quotations for the British ton of 2,240 lbs. or is there any other special unit of weight ?

(5) Names and addresses of firms who can handle inquiries with regard to this product.

Appointments Vacant

ASSISTANT GENERAL MANAGER for the Chemical and Metallurgical Corporation, Ltd.—The Managing Director, The Chemical and Metallurgical Corporation, Astmoor Works, Runcorn. Further details of this post will be found in our advertisement columns, page xxii.

ASSISTANT LECTURER IN AGRICULTURAL CHEMISTRY in the University of Leeds.—The Registrar, The University, Leeds. July 7.

WATER EXAMINER (F.I.C. or Honours Degree) in the Government Analyst's Department, Nigeria.—The Private Secretary (Appointments), Colonial Office, 2, Richmond Terrace, Whitehall, London, S.W.1. June 30.

LEATHER RESEARCH CHEMIST for the New Zealand Tanners' Research Association.—The High Commissioner for New Zealand, 415, Strand, London, W.C.2. June 30.

From Week to Week

MERCURY is reported to have been discovered in Hayti. Details are not yet to hand.

SIR HUGH BELL will open the Pannett Park and Art Gallery at Whitby on August 1.

THE *Daily Dispatch* ARTIFICIAL SILK exhibition will be held at Manchester from October 1 to 13.

THE NEW UNIVERSITY COLLEGE building, Nottingham, erected by Sir Jesse Boot, will be opened by the King on July 10.

AN ASPHALT FACTORY may be erected in Hamburg by the Pan American Petroleum and Transport Co., to be the centre of European sales.

A PARTY OF BERKSHIRE FARMERS visited Stockton-on-Tees recently and inspected the works of Synthetic Ammonia and Nitrates, Ltd.

CANADIAN PRODUCTION OF AMMONIUM SULPHATE in 1927 amounted to 24,708 tons, valued at $1,030,991, against 23,655 tons, worth $1,015,578, in 1926.

A SOAP FACTORY IN FULL PRODUCTION, 20 miles from London, with modern plant, having a present output of over 35 tons per week, is advertised for sale on p. xxi.

THE ONTARIO GOVERNMENT has made a grant of $50,000 to Queen's University for a new combined chemical and mining building. This is in addition to the yearly grant of $300,000.

FOUR PEOPLE WERE KILLED and four seriously injured by an explosion at a varnish factory in Paris last week. It is believed that petrol fumes became ignited by sparks from an electric motor.

A CHEQUE FOR £20,000 for the maintenance of the Courtauld Institute of Bio-Chemistry was accepted from Mr. S. A. Courtauld by Prince Arthur of Connaught at the opening of the Institute on Thursday, June 14.

THE KING HAS APPROVED of the following title being taken by Sir Alfred Mond: Baron Melchett, of Landford, in the county of Southampton. Lord Melchett was formally introduced into the House of Lords on Wednesday.

MORE THAN 1,500 EMPLOYEES from the Northwich works of Imperial Chemical Industries, Ltd., took part in the annual outing to London on Saturday, June 16. These were joined by 90 employees of the British Wesfalite Powder Factory, Denaby. Lord Melchett presided at lunch.

PROFESSOR LISE MEITNER, of the Kaiser-Wilhelm Institute of Physical Chemistry, Berlin, well known for her work on radio-activity, and Professor P. Ramart-Lucas, of Paris, well known for her work on organic chemistry, have been awarded the Ellen Richards Prize, to the amount of 2,000 dollars, of the American Society for the Advancement of Scientific Research by Women.

VACATION COURSES IN GLASS-BLOWING and instrument-making have been arranged for by the Society for the Advancement of the Training of Instrument Makers (Vereeniging tot Bevordering van de Opleiding tot Instrumentmaker), for the latter half of August, in the Physical (Cryogenic) Laboratory of the University, Leyden, Holland, particulars of which are obtainable from Dr. C. A. Crommelin of that laboratory.

THE POLISH PRODUCTION OF SULPHURIC ACID as a by-product of zinc smelting reached 227,000 metric tons in 1927 as compared with 175,000 tons in 1926. Exports of sulphuric acid from Poland during 1927 amounted to 28,034 tons, which compares with 23,581 tons exported in 1926, Germany being the principal importing country. The largest consumers of sulphuric acid in Poland are the manufacturers of superphosphate fertilisers.

WASTE FOOD PRODUCTS, LTD., will issue at par 105,000 ordinary shares of £1 each and 105,000 deferred shares of 1s. each early next week. The company, which has a capital of £150,000, is to carry on business as waste food products manufacturers, and will acquire the established businesses of the Drysdale Manufacturing Co. of Middlesex; W. Hornett and Co., of Beckton, London: and the Matusa Works, Beckton Road, London. A five years' contract, with option of renewal for a further similar period, has been entered into with J. Lyons and Co. and the Aerated Bread Co. for the daily collection of all their waste foods.

SALES OF NITRATE OF SODA reported by the Producers' Association since the introduction of free selling on April 14, 1927, up to May 31, 1928, amounted to 3,454,364 metric tons (including 348,216 tons disposed of for delivery in 1928–29). It is understood that further sales of the fertiliser have been effected during the current month, prices ranging from 16s. 4d. to 16s. 11d. per metric quintal. Discussions are now taking place between the Government and the Producers' Association with a view to devising some selling scheme which will preclude the recurrence of the competition in consuming markets between consigning producers and importers that has been the feature during the last few months. The Government have requested the Producers' Association to prepare and submit to them within thirty days, a scheme for the centralisation of sales which will include both producers and importers.

SIR WILLIAM PRESCOTT has been elected chairman of the Metropolitan Water Board.

INDIAN INDIGO EXPORTS in April amounted to 40 cwt., compared with 179 cwt. a year ago.

CRUDE OIL DEPOSITS of considerable extent and good quality are reported to have been found at Taranaki, New Zealand.

SWISS EXPORTS of chemicals, drugs, and dyes in March were valued at 16,000,000 francs, as against 13,600,000 francs in February.

SYNTHETIC CAMPHOR is to be produced on a large scale by a French company, the Société Alsacienne de Produits Chimiques.

DR. H. R. CARVETH, vice-president since 1917 of the Roessler and Hasslacher Chemical Co., New York, has been elected president.

MR. F. J. HARLOW, principal of the Wigan Mining and Technical College, has been appointed principal of the Chelsea Polytechnic, in succession to Mr. Sydney Skinner.

RECENT WILLS INCLUDE: Mr. Percy St. Clair Matthey, chairman of Johnson, Matthey and Co., Ltd., metallurgists, Hatton Garden, £169,488 (net personalty £150,232).

UNIVERSITY NEWS.—*Cambridge*: Mr. E. M. Case has been elected to the Frank Smart Studentship in Bio-Chemistry, and Mr. J. Hofton to the Dunlop Studentship in Chemistry.

THE LATEST DATE for receiving applications for space in the permanent Fuel Economy Exhibition, in London, is June 30. The offices of the exhibition are at 47, Victoria Street, London, S.W.1.

A LIST of second-hand and shop-soiled instruments and apparatus at reduced prices, comprising microscopes and accessories, cameras, field glasses, etc., has been issued by Ogilvy and Co., of 20, Mortimer Street, London, W.1.

THE SCHERING-KAHLBAUM A.-G., of Berlin, formed last year by the fusion of the well-known German firms of Schering and Kahlbaum, has just issued its report. "Rationalisation" of the factories has been carried out, some of them being closed.

EIGHTY-THREE PHOSGENE BOMBS were found last week on the premises of a Geneva manufacturing firm, while an inventory was being made. It was concluded that they had been imported from France during the war for the manufacture of veronal. They were later sunk in the Lake of Geneva.

THE CONTINENTAL CAUOUTCHOUC AND GUTTAPERCHA CO. has acquired control of the Harburger Gummiwarenfabrik Phœnix A.G., of Harburg-on-Elbe, Germany, and there will be a fusion of interests. This transaction is thought to be the forerunner of much wider movements, which will involve other rubber companies.

THERE IS NO IMMEDIATE PROSPECT of a settlement of the dispute in the dyeing industry between the National Union of Textile Workers, whose members are on strike, and the employers' association, but the union, it is stated, has expressed willingness to attend a conference either with the individual firms or with the employers' association.

CHARLES MAYER, a chemistry student at New York University, recently committed suicide by taking a large dose of potassium cyanide. He was a very brilliant student, having already published some original work. He had suffered from acute depression after reading in a German scientific journal papers by two German colloid chemists which forestalled work which he had almost completed on aggregations of molecules.

IMPORTS INTO PARAGUAY IN 1927 of chemicals, drugs, medicines, dyes, paints, soap, cosmetics, perfumes, and varnishes were valued at £120,870, compared with £114,256 in the previous year. It is stated that it may be worthy of consideration that whereas the confidence with which British goods and methods are regarded leaves little to be desired, sales are not infrequently lost by reason of quality, hence price, being higher than the market can afford.

THE DIVISION OF CHEMISTRY of the South African Department of Agriculture have reprinted, from the Transactions of the Royal Society of South Africa, three papers by Mr. P. R. v. d. R. Copeman, B.A., B.Sc., entitled: "Studies in the Growth of Grapes. Par IV. Initial Changes in Acidity."—"Part V. Relationship between Sugar and Soluble Solids in the Juice."—"Part VI. The Acid: Sugar Ratio." These are numbered 82, 83, and 87 respectively in the publications of the Division.

ARTIFICIAL SILK NEWS.—Sir William Bulmer states that the report of the directors of the Bulmer Rayon Co. is in course of preparation, and will be laid before the shareholders at a meeting to be called shortly. It has not been possible to make any statement until the completion of the transfer of the assets of the Bulmer Rayon to the British Acetate Silk Corporation. This and the payment of the Bulmer Rayon liabilities have now been effected and British Acetate Silk is now selling its own acetate and viscose silk. The statutory meeting of North British Artificial Silk, Ltd., was held on Friday, June 15, when Mr. Ernest Walls, chairman, gave details of the progress of the works. The contractors were ahead of the programme and the directors had acquired two additional sites adjoining the property in Jedburgh, on favourable terms. The board believed that their plant was so arranged that most of the difficulties delaying other companies which had started in recent years had been overcome by the arrangements they had made.

References to Current Literature

British

CORROSION.—Corrosion of chemical lead. D. W. Jones. *J.S.C.I.*, June 15, pp. 161–167T.

DYEING.—Some causes of uneven dyeing. H. R. Hirst. *J. Soc. Dyers and Colourists*, June, pp. 163–170.

Reserve salts. C. M. Keyworth. *J. Soc. Dyers and Colourists*, June, pp. 177–178.

GENERAL.—Arrhenius Memorial Lecture. Sir James Walker. *J. Chem. Soc.*, May, pp. 1380–1401.

Development problems in the exploitation of natural gas. S. J. M. Auld. *J. Inst. Petroleum Tech.*, April, pp. 190–221.

The recovery of gasoline from field and refinery gases with special reference to the Bayer charcoal process. I. Edeleanu. *J. Inst. Petroleum Tech.*, April, pp. 296–317.

Decomposition of paraffin-wax on heating. H. J. Waterman, J. N. J. Perquin and H. A. van Westen. *J. Inst. Petroleum Tech.*, April, pp. 318–327.

Activated carbon: Some industrial applications. J. T. Strachan. *J. Soc. Dyers and Colourists*, June, pp. 179–180.

LAUNDERING.—Improvements in dry-cleaning and laundering processes. A. E. Hatfield and E. A. Alliott. *J. Soc. Dyers and Colourists*, June, pp. 170–177.

OILS.—Oxidation of linseed oil. H. D. Chataway. *J.S.C.I.*, June 15, pp. 167–171T.

The constituents of some Indian essential oils. XXIV. The essential oil from the rhizomes of *Curcuma Zedoaria*, Roscoe. S. R. Rao, V. P. Shintre and J. L. Simonsen. *J.S.C.I.*, June 15, pp. 171–172T.

United States

ANALYSIS.—Zirconium sulphate as a reagent for the detection of potassium. R. D. Reed and J. R. Withrow. *J. Amer. Chem. Soc.*, June, pp. 1515–1522.

A specific reagent for the rapid gravimetric determination of sodium. H. H. Barber and J. M. Kolthoff. *J. Amer. Chem. Soc.*, June, pp. 1625–1631. A procedure is described for precipitating and weighing sodium as the compound (U_2O_3). $ZnNa(CH_3COO)_9.6H_2O$.

Volumetric determination of ferrous iron by means of potassium iodate. G. B. Heisig. *J. Amer. Chem. Soc.*, June, pp. 1687–1691.

APPARATUS.—A new equilibriator. A device for the determination of the distribution ratio of a volatile solute between two miscible solvents. G. Jones and B. B. Kaplan. *J. Amer. Chem. Soc.*, June, pp. 1600–1603. A description of a new device, called an equilibriator, which by mere rotation acts as an automatic circulating pump, forcing a gas or vapour to bubble continuously and in turn through two separated liquids.

ARTIFICIAL RESINS.—Resins from chlorinated cymene. P. H. Groggins. *Ind. Eng. Chem.*, June, pp. 597–599. A new type of chlorinated resins has been prepared from *p*-cymene by chlorination in the presence of a metal catalyst. The resins are insoluble in acids, alkali and alcohol.

Acetone condensation resins. H. A. Gardner and C. A. Knauss. *Ind. Eng. Chem.*, June, pp. 599–601.

DYES.—Alizarinsulphonic acid ester: A water-soluble alizarin preparation. E. Gebauer-Fülnegg and J. Eisner. *Ind. Eng. Chem.*, June, pp. 637–638. A convenient method of dyeing with the readily soluble alkali salts of the ester is described, which only takes 15 minutes, and gives brilliant red shades.

INORGANIC.—Mercury ammonium chloride: Facts concerning its formation and properties. F. G. Germuth. *Amer. J. Pharmacy*, May, pp. 285–293. Evidence is given for the existence of $HgCl_2$ $2NH_4Cl$. $2H_2O$, and a method of preparation is noted.

MARKETING.—Economic aspects of chemical distribution. W. Haynes. *Ind. Eng. Chem.*, June, pp. 571–575.

ORGANIC.—The catalytic preparation of methylamine from methyl alcohol and ammonia. T. L. Davis and R. C. Elderfield. *J. Amer. Chem. Soc.*, June, pp. 1786–1789. Methylamine is formed when methyl alcohol and ammonia are passed over a hot thorium oxide catalyst. The best temperature appears to be 325–330° C., and the best relative concentration about 0·80–0·83 mol of ammonia per mol of methyl alcohol. Under the best conditions nearly one-third of the methyl alcohol is converted into methylamine.

A new type of acid carbohydrate from seaweed. L. H. Cretcher and W. L. Nelson. *Science*, May 25, pp. 537–538.

Catalytic activity of titania in the reduction of nitro-compounds. G. Etzel. *J. Phys. Chem.*, June, pp. 852–860. Titania (prepared from titanium trichloride *via* titanium hydroxide) is an active catalyst in the reduction of nitrobenzene, giving rise to the formation of aniline, azobenzene, hydrazobenzene, ammonia and cyclo-compounds. The best yield of aniline (optimum temperature 282° C.) is about 94 per cent.

PROTECTIVE COATINGS.—Accelerated tests of organic protective coatings. P. H. Walker and E. F. Hickson. *Ind. Eng. Chem.*, June, pp. 591–596. Apparatus for exposing organic protective coatings to artificial light, water, and gases is described.

RUBBER.—Vulcanisation of rubber. N. Bacon. *J. Phys. Chem.*, June, pp. 801–828.

German

APPARATUS.—Apparatus for the production of average samples of powdery materials. J. von Meerscheidt-Hüllessem. *Chemische Fabrik*, June 13, pp. 357–358.

An automatic instrument for testing colour changes. G. Biganz. *Chemische Fabrik*, June 13, p. 358.

GENERAL.—The manufacture of barium and strontium nitrates. F. Chemnitius. *Chemiker-Zeitung*, June 13, pp. 465–466.

The dissociation constants of diphenyl- and diorthotolylguanidine. L. Metz. *Zeitschrift Elektrochem.*, June, pp. 292–294.

The decomposition of hydrogen peroxide by powdered glass in the presence of salts. W. M. Wright. *Zeitschrift Elektrochem.*, June, pp. 298–300. Hydrogen peroxide, in contact with powdered glass, decomposes with increased speed in the presence of silver nitrate, copper sulphate and lead acetate.

MANIPULATION.—A new rapid method of ashing. A. Fornet. *Chemische Fabrik*, June 13, p. 361.

ORGANIC.—The mechanism of the hydrolysis of *o*-sulphimidobenzoic acid (saccharin) and of *o*-sulphamidobenzoic acid. K. Täufel, C. Wagner and W. Preisz. *Zeitschrift Elektrochem.*, June, pp. 281–291.

Miscellaneous

CATALYSIS.—Researches on catalysis under reduced pressure, V. Grignard. *Bulletin Société Chim. France*, May, pp. 473–491 (in French).

CELLULOSE DERIVATIVES.—Complex metallic compounds of cellulose nitrates. A. Apard. *Revue Générale Colloïdes*, March, pp. 69–73 (in French.) Lead monoxide and lime yield, with solutions of cellulose nitrates, insoluble metallic derivatives of the latter. Some metal is also found in solution. A similar action occurs with other metallic oxides. Various complex derivatives of this kind have been obtained.

GENERAL.—Contribution to the study of the slow combustion of hydrocarbons. S. Landa. *Bulletin Société Chim. France*, May, pp. 529–536 (in French).

A process of partial dehydrogenation of certain hydrocarbons to render them capable of agglomerating coals. A. Léauté and G. Dupont. *Comptes Rendus*, June 4, pp. 1558–1560 (in French).

ORGANIC.—A new method of preparation of 2 : 2^1-dipyridyl. J. P. Wibaut and J. Overhoff. *Recueil Travaux Chimiques Pays-Bas*, June 15, pp. 761–763 (in German).

Disulphosuccinic acid. H. J. Backer and J. M. van der Zanden. *Recueil Travaux Chimiques Pays-Bas*, June 15, pp. 776–781 (in French).

The action of some sulphur compounds on 1-chloro-2 : 4-dinitronaphthalene, 1-chloro-2 : 4 : 5-trinitronaphthalene, and 1-chloro-2 : 4-dinitrobenzene. H. W. Talen. *Recueil Travaux Chimiques Pays-Bas*, June 15, pp. 782–795 (in English).

Patent Literature

The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.

Abstracts of Complete Specifications

290,399. CATALYSTS FOR THE CATALYTIC PRODUCTION OF METHANOL AND OTHER OXYGENATED ORGANIC COMPOUNDS FROM OXIDES OF CARBON AND HYDROGEN. Synthetic Ammonia and Nitrates, Ltd., and R. G. Franklin, Billingham, Stockton-on-Tees, Durham. Application date, November 15, 1926.

Catalysts containing or comprising zinc and chromium oxides have been proposed for the synthesis of methanol and like compounds, *e.g.*, in Specifications 227,147 and 275,345 (see THE CHEMICAL AGE, vol. xii, p. 161, and vol. xvii, p. 242 respectively). It is now found that catalysts of this type are conveniently prepared by heating a mixture comprising zinc carbonate or basic zinc carbonate and a chromium compound —*e.g.*, zinc chromate or basic zinc chromate. When zinc chromates are employed the heating should be effected in presence of the reacting gases or of hydrogen. The preferred ration of zinc to chromium is 9 to 1.

290,421. RED OXIDE OF IRON, SUITABLE FOR USE AS A PIGMENT, MANUFACTURE OF. T. Storer, 54, Woodstock Road, Moseley, Birmingham, and C. J. A. Taylor, 7, Chetwynd Road, Wolverhampton. Application date, April 9, 1927.

A ferrous salt is subjected to heat and pressure and to the action of a non-gaseous oxidizing agent, such as black oxide of manganese, or a solution of a ferrous salt is caused to react with the black oxide at ordinary temperature, and the separated precipitate is heated under pressure.

290,444. ORGANOMETALLIC COMPOUNDS, MANUFACTURE OF. C. Arnold, London. From Standard Development Co., 26, Broadway, New York, U.S.A. Application date, May 21, 1927.

To prepare an alkyl compound of a metal of the second sub-group of the fourth periodic group (*e.g.*, lead and tin) an alloy of the metal with an alkali metal is first made, and the subdivided alloy is charged into an autoclave together with an alkylating agent, *e.g.*, an alkyl halide, and a hydrocarbon solvent for the latter. The reaction is then started by warming the charge, and the temperature is maintained between 40° and 70° C. until the reaction is completed, whereupon the metal-alkyl compound is separated.

290,464. LACTIC ACID AND ITS DERIVATIVES, MANUFACTURE OF. J. Y. Johnson, London. From I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, July 2, 1927.

In the manufacture of lactic acid by the fermentation of low grade materials, such as molasses or potatoes, the known methods (*e.g.*, repeated recrystallisations) for extracting and purifying the lactate, contained in the residues obtained by evaporation of the neutralised mash, are costly. It is now found that extraction of the lactate from the residues by means of methanol provides a more economical method. The lactate (usually calcium lactate) contained in the extract is obtained by driving off the methanol or by precipitation with acetone or methyl formate. Lactic acid may be liberated from the lactate by mineral acids or lactic esters may be obtained by direct esterification of the methyl-alcoholic lactate solution or by evaporating this solution, dissolving the residue in methanol or another alcohol, and esterifying.

290,491. MANGANESE PEROXIDE AND OTHER MANGANESE OXIDES, PRODUCTION OF, FROM MANGANESE-CONTAINING ORES AND SUBSTANCES. K. E. Dittman and K. Faerber, Gelsenkirchen, Germany, and Gelsenkirchener Bergwerks-Akt.-Ges., Dortmund, Germany. Application date, September 10, 1927.

Manganese-containing materials have been decomposed by treatment of the powdered ore, etc., with liquid or gaseous sulphurous acid followed by lixiviation and precipitation of the manganese as hydroxide from the resulting solution of manganese sulphate, *e.g.*, by means of milk of lime. It is now found to be more economical to decompose the finely-dispersed materials with diluted sulphurous acid (an exothermic reaction) the resulting manganese sulphate lye being inspissated and the sulphate roasted off. The sulphurous acid liberated at various stages of the process, including that produced in the roasting operation according to the equation

$$2MnSO_4 + C = 2MnO + 2SO_2 + CO_2$$

is recovered and used again for dressing the ore, etc.

290,518. AMMONIUM PHOSPHATE OR MIXED FERTILISERS CONTAINING AMMONIUM PHOSPHATE, PRODUCTION OF, BY LEACHING OF RAW PHOSPHATE. F. G. Liljenroth, Stockholm, Sweden. International convention date, July 12, 1927.

This is a modification of the known process according to which the raw phosphate is leached with an acid solution and the lime is converted into calcium sulphate by means of sulphuric acid or ammonium sulphate, whilst the phosphoric acid solution is neutralised with ammonia, and the separated calcium sulphate is converted into ammonium sulphate and calcium carbonate by means of ammonia and carbon dioxide. The improvement comprises the utilisation of the ammonium sulphate solution produced for washing, preferably at a temperature of 50–90° C., the separated calcium sulphate in order to recover adherent solution of phosphoric acid. Preferably the ammonium sulphate solution is concentrated by evaporation or by addition of more ammonium sulphate or of potassium sulphate before being used for the washing.

290,523. OXIDATION OF ETHYL ALCOHOL, PROCESS FOR. O. Y. Imray, London. From S. Goldschmidt, Karlsruhe i. B., Germany. Application date, November 30, 1927.

It is known that the oxidation of ethyl alcohol to acetaldehyde and acetic acid can be effected by passing the alcohol vapour, together with air or oxygen, over catalytic copper or silver, but there is usually a considerable formation of less valuable by-products such as methane and acetals. A better yield of the acetaldehyde and acetic acid is now found to be obtained if silver is the catalyst and its temperature is maintained between the limits of 380° and 440° C. It is also advantageous to use a comparatively small or no excess of oxygen, and to effect a quick chilling of the gases after they have left the catalyst. The temperature of the catalyst may be controlled by adjustment of the speed of the current of gases or adjustment of the proportion of oxygen to inert gases therein.

290,683–4. TITANIUM COMPOUNDS, PREPARATION OF. P. Spence and Sons, Ltd., and S. F. W. Crundall, Manchester Alum Works, Holland Street, Manchester. Application date, November 17, 1926.

290,683. This is an improvement upon the process describep in Specification 261,051 (see THE CHEMICAL AGE, vol. xv, p. 594) for precipitating hydrated basic titanium phosphate from impure—*e.g.*, iron-containing—solutions of titanium salts. It is found that by increasing the free acid content of the solutions above the equivalent of 15 per cent. SO_3 referred to in that specification, an economy can be effected by the use of sulphuric in place of hydrochloric acid, the concentration of the titanium oxide content can be increased, and the operation can be effected below 50° C. The acid mother liquor can be used in subsequent operations.

290,684. Titanium compounds suitable for use as, or for the preparation of, pigments are obtained by treating insoluble titanium phosphates, or mixtures of these with other desired substances, with suitable bases in the form of oxides, hydroxides, salts of weak or volatile acids—*e.g.*, carbonates—or substances giving rise to these under the conditions of the reaction. A suspension of the phosphate or phosphatic mixture may be treated with a solution or suspension of the base, the product being separated and calcined, or the dry reagents may be intimately mixed and calcined. Soluble phosphate produced may be washed out and recovered. Coloured pigments are obtainable by the use of suitable bases, such as ferric or chromic oxide.

290,690. DYES. B. Wylam, J. E. G. Harris, J. Thomas, and Scottish Dyes, Ltd., Earl's Road, Grangemouth, Stirling. Application date, December 17, 1926.

Derivatives of vat dyestuffs are prepared by the action thereon of alkyl halides or organic carboxylic halides or anhydrides in presence of a metal—*e.g.*, zinc—and a tertiary organic base, usually pyridine, the reaction being preferably effected at or about the boiling point of pyridine. In examples, dimethoxydibenzanthrone, indigo, indanthrone, and flavanthrone are specified as parent dyestuffs. The products, which are stable in air, are for the most part insoluble in water, but soluble in pyridine or alcohol. They are useful for the preparation of purified forms of the parent dyestuffs.

290,719. ALKALI AND ALKALINE EARTH HYDROXIDES, APPARATUS FOR USE IN THE MANUFACTURE OF. W. Carpmael, London. From I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, February 16, 1927.

Alkali or alkaline earth amalgams are decomposed in apparatus having stirring or propelling members composed wholly or substantially of carbonaceous material.—*e.g.* charcoal, coke, graphite or compositions thereof.

290,720. DYEING OF ESTERS AND ETHERS OF CELLULOSE. AND ITS CONVERSION PRODUCTS. W. Carpmael, London. From I. G. Farbenindustrie Akt.-Ges., Frankfort-on Main, Germany. Application date, February 16, 1927.

Brownish-violet to black dyeings of good fastness to water and washing are obtained on cellulose esters, ethers, etc.—*e.g.*, on acetate silk—by means of azo dyestuffs obtained by coupling a diazo compound of a dinitro-aminophenol or a derivative or substitution product thereof with an unsulphonated and uncarboxylated aminonaphthol. Specified first components are 4 : 6-dinitro-2-aminophenol and a partial reduction product of 2 : 4 : 6-trinitro-3-methyl-1- oxybenzene, and specified second components are the 1 : 8-, 1 : 7-, 1 : 6-, 1 : 5-, and 2 : 8-aminonaphthols. Certain of the dyestuffs are suitable for diazotization and development on the fibre for deepening the shades and improving the fastness.

290,733. AZO DYESTUFFS WHICH ARE INSOLUBLE IN WATER, MANUFACTURE OF. W. Carpmael, London. From I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, February 18, 1927.

These dyestuffs are obtained by coupling a tetrazotized 2 : 7-diaminocarbazole or an unsulphonated derivative thereof with a coupling component other than β-naphthol. They are preferably produced on a substratum or on the fibre. Specified tetrazo components are 2 : 7-diamino- and 3 : 6-dimethyl (or dichloro)-2 : 7-diaminocarbazole, and specified coupling components are the anilide and 1-naphthalide of 2 : 3-oxynaphthoic acid, 7-oxynaphthocarbazole, and diacetoacetic acid arylides.

290,749. ALKALI IODATES, PROCESS FOR THE MANUFACTURE OF. W. Carpmael, London. From I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, February 22, 1927.

The conversion of alkali iodates into iodides by heating—*e.g.*, according to the equation

$$2KIO_3 = 2KI + 3O_2,$$

—is not a readily reversible reaction, as the reaction velocity in the reverse direction is, under usual conditions, too low. The reversal is, however, effected according to this invention by causing oxygen to react (1) upon a melt of an alkali hydroxide and an alkali iodide, the preferred proportion of hydroxide to iodide being about 3 to 1, or (2) upon well-stirred alkali iodide at a temperature above 400° C., and preferably above 600° C., and a pressure above 100 atmospheres, or (3) upon a solution of alkali iodide at a temperature above 100° C and a pressure above one atmosphere, preferably in the presence of a catalyst providing hydroxyl ions—*e.g.*, caustic soda or potash lye.

290,750. ELECTROLYTIC MANUFACTURE OF COMPOUNDS CONTAINING ACTIVE OXYGEN. W. Carpmael, London. From I.G. Farbenindustrie Akt.-Ges, Frankfort-on-Main, Germany. Application date, February 22, 1927.

Electrolytic processes are known for the production of compounds containing active oxygen which depend upon anode reactions exclusively, e.g., for producing persulphates or percarbonates, or upon cathode reactions exclusively, *e.g.*, for producing hydrogen peroxide or reducing ogygen. The present invention is characterised by the simultaneous utilisation of a cathode reaction and an anode reaction in the production of such compounds, a considerable economy being thus effected in the consumption of current. The electrolysis can be effected at ordinary or increased pressure and also in a continuous manner. In an example, the production is described of ammonium persulphate in the anode chamber and hydrogen peroxide in the cathode chamber of an electrolytic cell containing saturated ammonium sulphate solution with sulphuric acid in the anode chamber, and dilute sulphuric acid, through which a vigorous current of oxygen is passed, in the cathode chamber. The production of perborate in both chambers, or of percarbonate in the anode chamber and perborate in the cathode chamber, is also referred to.

290,840. AROMATIC HYDROCARBONS, PURIFICATION OF. H. G. C. Fairweather, London. From The Seldon Co., 339, Second Avenue, Pittsburg, Pennsylvania, U.S.A. Application date, June 7, 1927.

Crude aromatic hydrocarbons, particularly those of the benzene series such as the various fractions obtained in the distillation of coal tar, oil tar, or the oils produced by washing coal gas, are purified by subjecting them to selective halogenation to transform the impurities into readily separable or harmless substances. In some cases it is advantageous to effect a preliminary purification with strong sulphuric acid to an extent less than that usually employed ; in some cases also the halogenation may be followed by a limited sulphuric acid treatment. The halogenation may be effected in presence of a halogen carrier, *e.g.*, sulphur or sulphur compounds, or under conditions of heat, pressure, light, or silent electric discharge which are favourable more particularly to halogenation of aliphatic, alicyclic, or heterocyclic compounds. The Specification includes eighteen examples of methods of carrying out the invention including the economical utilisation and recovery of the various reagents and by-products.

290,860. SODIUM NITRATE, PROCESS FOR THE RECOVERY OF. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date July 21, 1927.

Sodium nitrate is usually recovered from dilute solutions, such as those obtained in the treatment of caliche, by cooling to a low temperature or by evaporation, both methods involving costly expenditure of energy. It is now found to be more economical to convert the nitrate into a double or mixed salt, sparingly soluble at ordinary temperatures, to separate this salt from the mother liquor, and to recover the sodium nitrate from it. In the preferred process, solid sodium sulphate is added to the solution to obtain a deposit of the composition $NaNO_3$, Na_2SO_4, H_2O (Darapskite), which is subsequently treated to recover its constituent salts by heating it to above 70°C. with just sufficient water to dissolve the nitrate, filtering hot, and crystallising the nitrate from the filtrate. The mother liquor from the double salt is preferably employed for leaching fresh quantities of nitrate earth.

NOTE.—Abstracts of the following Specifications, which are now accepted, appeared in THE CHEMICAL AGE when they became open to inspection under the International Convention :—266,007 (Monsanto Chemical Works) relating to contact sulphuric acid process, see Vol. XVI, p. 403 ; 268,789 (I.G. Farbenindustrie Akt.-Ges.) relating to manufacture of diazotised monamines of the cyclic series, see Vol. XVI, p. 559 ; 270,640 (A. Kropf) relating to alloys of high melting-point, see Vol. XVII, p. 15 (Metallurgical Section) ; 273,337 (I.G. Farbenindustrie Akt.-Ges.) relating to production of low boiling point hydrocarbons by the destructive hydrogenation of tars, coals, mineral oils, etc., see Vol. XVII,p. 221 ; 275,985 (I.G. Farbenindustrie Akt.-Ges.) relating to magnesium alloys for use in connection with pistons for internal combustion engines, see Vol. XVII, p. 47 (Metallurgical Section) ; 282,629 (I.G. Farbenindustrie Akt.-Ges.) relating to manufacture of vat dyestuffs, see Vol. XVIII, p. 204 ; 282,658 (Soc. l'Air Liquide, Soc. Anon pour l'Etude et l'Exploitation des Procédés G. Claude) relating to processes for carrying out exothermic chemical reactions under pressure and at a high temperature, see Vol. XVIII, p. 204. Addition to 268,721 ; 286,290 (Compagnie Nationale de Matières Colorantes et Manufactures

de Produits Chimiques du Nord Réunies Etablissements Kuhlmann) relating to manufacture of phosphorus, phosphoric acid, and hydrogen, see Vol. XVIII, p. 440.

International Specifications not yet Accepted

288,612. Sulphonating Fatty Acids, etc. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, June 21, 1926.

The sulphonation of aliphatic and hydroaromatic carboxylic acids having more than eight carbon atoms in the molecule, *e.g.*, stearic, oleic, or palmitic acids, is effected at ordinary or elevated temperatures by means of sulphuric anhydride, fuming sulphuric acid, chlorosulphonic acid, or concentrated sulphuric acid at not lower than 100° C. The products are suitable for addition to acid baths for dyeing, fulling, and carbonizing, or for use as catalytic fat saponifiers.

288,629–9. Pyridine Derivatives. Schering-Kahlbaum Akt.-Ges., 170, Müllerstrasse, Berlin. (Assignees of C. Räth, Feltow, Rangsdorf, Berlin.) International Convention date, April 14, 1927.

288,628. Hydroxypyridines and their derivatives possessing therapeutic properties are obtained from the corresponding halogen pyridines having no saponifiable group in the 5-position by treatment with an alkaline or acid saponifying agent. Suitable starting-materials are 2-halogen-pyridines which may contain 3- or 5-arsinic acid groups, nitro groups, or further halogen groups.

288,629. Halogenpyridines containing substituent nitro, carboxy, or further halogen groups, and having therapeutic value, are obtained from the corresponding N-alkyl or aryl-oxopyridines by treatment with a halogenating agent such as phosphorus pentachloride, phosgene, or thionyl chloride.

288,637. Lupanine. E. Von Ammon, 6, Pal Utca, Budapest, and K. Szombathy, 25, Klara Utca, Rákospalota, Hungary. International Convention date, April 14, 1927.

Lupin seeds are extracted with a solution of a neutral salt sufficiently concentrated to precipitate the conglutin, thus avoiding loss of the latter. The proteins are precipitated from the solution, *e.g.*, with sulphuric acid, and filtered, and the filtrate is made alkaline and extracted with benzol from which the lupanine is recovered by crystallization. The hydrochloride can be separated into the *d*- and *l*- forms by use of chloroform in which only the *d*- form is soluble.

288,972. Synthetic Drugs. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, April 16, 1927.

Aromatic N-aminoalkylamino-aldehydes, which are oily products useful in the preparation of therapeutic substances, are prepared by any of the following methods :—(1) An aromatic aminoalkylamino compound having a free *p*-position is treated with formaldehyde in presence of an aromatic hydroxylamine compound, and the resulting anhydro body is decomposed with alkali ; (2) an aldehyde group is produced in an aromatic aminoalkylamino compound containing a group transformable into an aldehyde group in any usual manner, *e.g.*, by oxidation ; (3) an aminoalkylamino group is introduced into the primary or secondary amino group of an aromatic aldehyde by the usual alkylation methods.

288,977. Metallic and Ammonium Sulphates. I.G. Farbenindustrie Akt.Ges., Frankfort-on-Main, Germany. International Convention date, April 16, 1927.

An aqueous ammoniacal solution of a metallic, *e.g.*, zinc sulphate is treated with coke oven gas or raw illuminating gas to be purified, and an aqueous suspension of the precipitated sulphide is treated with oxygen under pressure (20–30 atmospheres) at 120° C. or higher temperature to oxidise sulphide to sulphate. Ammonium sulphate is recovered from the filtrate. The metallic sulphate may be used again, and the process thus becomes cyclic.

288,983. Dyes. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, April 16, 1927.

Azo dyes yielding dyeings of which the fastness is increased by after-treatment with salts of copper or chromium are produced in substance or on the fibre by coupling with a 2 : 3-oxynaphthoic arylide a diazotised aminoazo compound obtained by coupling an *o*-oxydiazo compound, or a substitution product thereof, with a suitable amine.

288,985. Dyes ; Intermediate Products. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, April 16, 1927.

Benzanthrone-*peri*-dicarboxylic acid and its derivatives are obtained by treating the corresponding 4-benzoyl-1 : 8-naphthalic acids or their anhydrides with a metallic chloride, *e.g.*, aluminium or ferric chloride, either alone or in presence of an oxidising agent.

288,986. Dyes ; Intermediates. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, April 16, 1927.

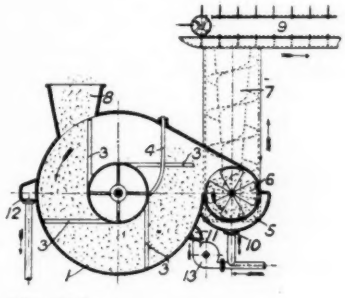
Hydroxythionaphthenes are produced by heating with aqueous alkalies arylcarboxylicacidamide-*o*-thioglycollic acids obtained from the arylcarboxylic-acid-nitrile-*o*-thioglycollic acids by hydrolysis with sulphuric acid or by the action of zinc dust and hydrochloric acid. Oxidation of the products to the corresponding thioindigo derivatives may be effected without first isolating them.

288,997. Cellulose. Wolff and Co., 35, Langestrasse, Walsrode, and R. Weingand, 80, Hauptstrasse, Bomlitz, Germany. International Convention date, April 19, 1927.

In a preparatory treatment of raw cellulosic materials, cellulose, freed wholly or in part from hemicellulose by treatment with alkali, is subjected to the action of a salt (*e.g.*, sodium chloride or potassium sulphate) solution or other suitable liquid (*e.g.*, an alcohol) prior to washing with water. Formation of further amounts of hemicellulose is thus avoided.

288,999. Lixiviating Materials. K. Komers, 40, Stephenska, Prague. International Convention date, April 19, 1927.

Material to be subjected to countercurrent lixiviation is fed from a hopper 8 into a cylindrical casing 1 through which the



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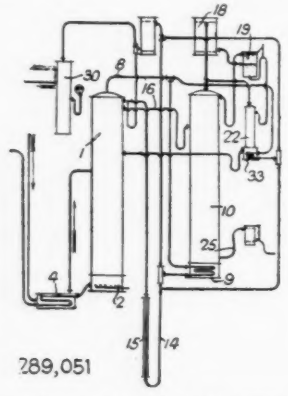
lixiviating liquid, maintained at a constant level by an overflow 12, is circulated by a pump 13. The material is carried round by arms 3 on a coaxial inner drum until stopped by a grid 4 between the arms of which the arms 3 pass, and the treated material passes into a chamber 5 with a sieve-like base and is removed by a conveyor 6. Liquid drawn off from the chamber 5 at 10 is returned to the main stream. The grid 4 may be raised and lowered to permit continuous treatment periodically.

289,080. Gasifying Coal, Coke, etc. O. Gross, 6, Nordstrasse, Sodingen, Germany. International Convention date, April 23, 1927.

A gas mixture suitable for use in ammonia synthesis and similar catalytic processes is obtained by treatment with a mixture of air, oxygen and steam. The resulting mixture of hydrogen, carbon monoxide, nitrogen and hydrocarbons is purified and its hydrogen content is increased by treatment with oxygen, the hydrocarbons being converted into hydrogen and carbon monoxide, and the latter being removed. It is preferred to carry out the process by blowing oxygen and steam into a gas producer charge and passing the hot gases through the fresh coal to distil it. The hot gases are passed into a reaction chamber filled with refractory material and supplied with air, oxygen and steam. To accelerate the reaction the filling material may be coke, platinum, alkaline earth oxides, or oxides of iron, chromium or manganese.

289,051. Alcohol. Distilleries des Deux-Sèvres, Melle, Deux-Sèvres, France. International Convention date, April 21, 1927.

To effect an economy of steam in the usual 3-stage process for obtaining absolute alcohol from fermented mash comprising (1) distillation of the mash, (2) rectification of the distilled alcohol, (3) dehydration of the alcohol by the azeotropic method, the first stage is conducted under pressure, thus



289,051

raising the temperature of the alcohol vapours to enable them to supply all the heat for stages (2) and (3). The fermented mash is preheated in a heat exchanger 4 by the distilled wash, and is distilled in a column 1 by steam jets 2, the column being supplied with compressed air from a vessel 30 so that the vapour issues from the pipe 8 at a temperature of 89° C. This vapour passes through coils 33 and 9 to heat the still 22 and the dehydrating vessel 10 respectively. The condensed alcohol is returned by an air lift 15 to the column 1, and delivered through a pipe 16 to the dehydrator 10, the vapours from which are condensed in a condenser 18 and separated into two layers in a decanter 19, the upper layer being returned to column 10 and the lower layer passed to column 22. The absolute alcohol is discharged by pipe 25.

Latest Notifications.

292,066. Process for the manufacture of derivatives of ethylene and homologues thereof. I.G. Farbenindustrie Akt.-Ges. June 11, 1927.

292,068. Manufacture of mixed or complete fertilizers. I.G. Farbenindustrie Akt.-Ges. June 11, 1927.

291,748. Manufacture of divinyl and homologues thereof. I.G. Farbenindustrie Akt.-Ges. June 7, 1927.

291,767. Process of and apparatus for carrying out chemical reactions in a high vacuum for the purpose of neutralizing free fatty acids by means of glycerine. Metallbank und Metallurgische Ges. Akt.-Ges. June 8, 1927.

291,768. Manufacture of derivatives of vat-dyestuffs, and process of printing therewith. Soc. of Chemical Industry in Basle. June 8, 1927.

291,773. Manufacture of derivatives of cork. I.G. Farbenindustrie Akt.-Ges. June 8, 1927.

Specifications Accepted with Date of Application

283,868. Containers for hydrofluoric acid and other highly corrosive chemicals, and materials for the manufacture thereof. H. O. Traun [trading as Traun and Söhne, Dr. H. Vorm., Harburger Gummi-Kamm-Cie]. January 18, 1927.

283,898. Lead minium, having a high peroxide content. Process and plant for the production of. Consortium Electro-Chimique de France. January 19, 1927.

284,648. Manufacture of glass which is opaque to X-rays. Soc. Anon. des Manufactures des Glaces et Produits Chimiques de St.-Gobain, Chauny and Cirey. February 2, 1927.

291,522. Alloys for the construction or lining of apparatus and for other purposes, and the production thereof. J. Y. Johnson (*I.G. Farbenindustrie Akt.-Ges.*). March 3, 1927.

291,527. Treating gases and vapours with liquids, Method and apparatus of the bubble type for. F. B. Dehn (*C. F. Braun*). March 3, 1927.

291,539. Nitrocellulose, Manufacture of coloured solutions of. O. Y. Imray (*I.G. Farbenindustrie Akt.-Ges.*). March 10, 1927.

291,546. Vat dyestuffs, Manufacture and production of. J. Y. Johnson (*I.G. Farbenindustrie Akt.-Ges.*). March 14, 1927.

291,552. Derivatives of N-dihydro-1 : 2 : 1^1 : 2^1-anthraquinonazine, fast to chlorine, Manufacture and production of. J. Y. Johnson (*I.G. Farbenindustrie Akt.-Ges.*). March 18, 1927.

291,568. Roasting of ores and oxidation of pyritic and sulphide ores, natural sulphides, arsenides, imperfectly roasted residues, regulus, mattes, hardheads, and other metallurgical products containing tin and/or compounds of other metals such as lead, zinc, copper, bismuth, antimony, tungsten, iron, and associated base and precious metals. F. L. Wilder, E. Morris, E. Schiff and E. S. King. April 6, 1927.

291,576. Hydrogen, Apparatus for the separation of, from hydrogenous mixtures. H. M. R. Barjot. April 14, 1927.

291,712. Methylol compounds of amides. G. Walter. November 29, 1926.

291,717. Manufacture of steel in the Siemens-Martin furnace. F. Siemens Akt.-Ges., R. Dürrer, F. C. Siemens and A. Sprenger. December 24, 1926.

Applications for Patents

Auer, L. Vulcanization, etc., of organic isocolloids. 17,172 June 13.

Bidaud, F., Gault, H., and Soc. Chimique des Usines du Rhône. Manufacture of chloracetic cellulose esters. 17,007. June 12.

Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of disazodyestuffs. 16,935. June 11.

Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of alkali metals from sulphur compounds. 16,936. June 11.

Carpmael, A., I.G. Farbenindustrie Akt.-Ges and Schering-Kahlbaum Akt.-Ges. Manufacture of lactic acid esters. 17,189. June 14.

Chemical Construction Co. and Croad, A. K. Concentrating nitric acid. 16,888. June 11.

Continuous Coal Carbonisation, Ltd., Nisbet, R., and Winger, C. B. Carbonisation of coal, etc. 17,165, 17,166, 17,167, 17,168, 17,169, 17,170. June 13.

Cottet, E. C., and Grillet, N. B. Condensation products of polyphenols and formol. 17,500. June 16.

Courtaulds, Ltd. Manufacture of cellulose derivatives. 16,887. June 11.

Crundall, S. F. W., and Spence & Sons, Ltd., P. Preparation of calcium sulphate. 17,209. June 14.

Diamond, C. Manufacture of cellulose derivatives. 16,887. June 11.

Du Pont de Nemours and Co., E.I. Concentration of nitric acid. 17,402. June 15. (United States, June 27, 1927.)

Hercules Powder Co. Blasting-explosive. 16,902. June 11. (United States, November 4, 1927.)

Hercules Powder Co. Method of producing alkyl esters of abietic acid. 17,516. June 16. (United States, October 18.)

I.G. Farbenindustrie Akt.-Ges and Johnson, J. Y. Manufacture of nitrogenous vat dyestuffs. 16,885, 16,886. June 11.

I.G. Farbenindustrie Akt.-Ges and Johnson, J. Y. Absorption of dilute nitrous gases. 17,122. June 13.

I.G. Farbenindustrie Akt.-Ges and Johnson, J. Y. Appliances for manufacture of gaseous olefines. 17,363. June 15.

I.G. Farbenindustrie Akt.-Ges. Manufacture of condensation products from urea, etc. 16,906. June 11. (Germany, June 24, 1927.)

I.G. Farbenindustrie Akt.-Ges. Manufacture of N-oxyethyl derivatives of 2-amino-1-oxybenzene. 17,136. June 13. (Germany, June 27, 1927.)

Imperial Chemical Industries, Ltd. Production of esters from acid amides. 17,014. June 12.

Imperial Chemical Industries, Ltd. Regenerating active carbon. 17,078. June 13.

Metallbank und Metallurgische Ges. Akt.-Ges. Manufacture of sulphuric acid, etc. 17,159. June 13. (Germany, July 7, 1927.)

Montecatini Soc. Generale per l'Industria Mineraria ed Agricola. Manufacture of ammonium salts. 17,173. June 13. (Italy, June 14, 1927.)

Moulton, H. F. Manufacture of nitrocellulose. 17,465. June 16.

Newport Co. Purifying and decolorizing resins. 17,375. June 15. (United States, July 25, 1927.)

Ormandy, W. R., and Spence & Sons, Ltd., P. Preparation of moisture-absorbing material. 17,379. June 15.

Ormandy, W. R., and Spence & Sons, Ltd., P. Preparation of materials for absorbing ammonia. 17,380. June 15.

Schering-Kahlbaum Akt.-Ges. Manufacture of alkylated phenols. 17,373. June 15. (Germany, July 21, 1927.)

Scovill Manufacturing Co. Manufacture of aldehyde-amino resinous compounds. 17,430. June 15. (United States, June 25, 1927.)

Shaw, H. S. Hele-. Rotary compressors, etc. 17,422. June 15.

Smith, H. G. Production of esters from acid amides. 17,014. June 12.

Soc. Chimique des Usines du Rhône. Condensation products of polyphenols and formol. 17,500. June 16.

Soc. of Chemical Industry in Basle. Process for obtaining sterols. 17,290. June 14. (Switzerland, June 14, 1927.)

Soc. of Chemical Industry in Basle. Manufacture of condensation products. 17,368. June 15. (Switzerland, June 16, 1927.)

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID ACETIC, 40% TECH.—£19 per ton.

ACID BORIC, COMMERCIAL.—Crystal, £30 per ton; powder, £32 per ton; extra fine powder, £34 per ton.

ACID HYDROCHLORIC.—3s. 9d. to 6s. per carboy d/d, according to purity, strength, and locality.

ACID NITRIC, 80° TW.—£21 10s. to £27 per ton, makers' works, according to district and quality.

ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations; 140° Tw., Crude Acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.

AMMONIA ALKALI.—£6 15s. per ton f.o.r. Special terms for contracts.

BISULPHITE OF LIME.—£7 10s. per ton, f.o.r. London, packages extra.

BLEACHING POWDER.—Spot, £9 10s. per ton d/d; Contract, £8 10s. per ton d/d, 4-ton lots.

BORAX, COMMERCIAL.—Crystals, £19 10s. to £20 per ton; granulated, £19 per ton; powder, £21 per ton. (Packed in 2-cwt. bags carriage paid any station in Great Britain.)

CALCIUM CHLORIDE (SOLID).—£5 to £5 5s. per ton d/d carr. paid.

COPPER SULPHATE.—£25 to £25 10s. per ton.

METHYLATED SPIRIT 61 O.P.—Industrial, 1s. 6d. to 1s. 11d. per gall.; pyridinised industrial, 1s. 8d. to 2s. 1d. per gall.; mineralised, 2s. 7d. to 2s. 11d. per gall.; 64 O.P., 1d. extra in all cases.

NICKEL SULPHATE.—£38 per ton d/d.

NICKEL AMMONIA SULPHATE.—£38 per ton d/d.

POTASH CAUSTIC.—£30 to £33 per ton.

POTASSIUM BICHROMATE.—4½d. per lb.

POTASSIUM CHLORATE.—3¾d. per lb., ex wharf, London, in cwt. kegs.

SALAMMONIAC.—£45 to £50 per ton d/d. Chloride of ammonia, £37 to £45 per ton, carr. paid.

SALT CAKE.—£3 15s. to £4 per ton d/d. In bulk.

SODA CAUSTIC, SOLID.—Spot lots delivered, £15 2s. 6d. to £18 per ton, according to strength; 20s. less for contracts.

SODA CRYSTALS.—£5 to £5 5s. per ton, ex railway depots or ports.

SODIUM ACETATE 97/98%.—£21 per ton.

SODIUM BICARBONATE.—£10 10s. per ton, carr. paid.

SODIUM BICHROMATE.—3½d. per lb.

SODIUM BISULPHITE POWDER, 60/62%.—£17 10s. per ton delivered for home market, 1-cwt. drums included; £15 10s. f.o.r. London.

SODIUM CHLORATE.—2¾d. per lb.

SODIUM NITRITE, 100% BASIS.—£27 per ton d/d.

SODIUM PHOSPHATE.—£14 per ton, f.o.b. London, casks free.

SODIUM SULPHATE (GLAUBER SALTS).—£3 12s. 6d. per ton.

SODIUM SULPHIDE CONC. SOLID, 60/65.—£13 5s. per ton d/d. Contract, £13. Carr. paid.

SODIUM SULPHIDE CRYSTALS.—Spot, £8 12s. 6d. per ton d/d. Contract, £8 10s. Carr. paid.

SODIUM SULPHITE, PEA CRYSTALS.—£14 per ton f.o.b. London, 1-cwt. kegs included.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—6¼d. to 6¾d. per lb. Crude 60's, 2s. 3d. to 2s. 4d. per gall. prompt.

ACID CRESYLIC 99/100.—2s. 8d. to 3s. per gall. 97/99.—2s. 7d. to 2s. 8d. per gall. Pale, 95%, 2s. 3d. to 2s. 6d. per gall. Dark, 2s. 2d. to 2s. 4d.

ANTHRACENE.—A quality, 2½d. per unit. 40%, £5 per ton.

ANTHRACENE OIL, STRAINED.—8d. to 8½d. per gall. Unstrained, 7¾d. to 8d. per gall.

BENZOLE.—Prices at works: Crude, 10½d. to 11d. per gall.; Standard Motor, 1s. 4½d. to 1s. 5d. per gall.; 90%, 1s. 7d. to 1s. 8d. per gall.; Pure, 1s. 10d. to 1s. 11d. per gall.

TOLUOLE.—90%, 1s. 7d. to 2s. per gall. Firm. Pure, 1s. 10d. to 2s. 2d. per gall.

XYLOL.—1s. 1d. to 1s. 11d. per gall. Pure, 2s. 3d. per gall.

CREOSOTE.—Cresylic, 20/24%, 9d. per gall.; middle oil, 7d. to 8d. per gall. Heavy, 8d. to 8½d. per gall. Standard specification, 6¾d. to 7d. ex works. Salty, 7½d. per gall.

NAPHTHA.—Crude, 8½d. to 9d. per gall. Solvent 90/160, 1s. 1d. 1s. 2d. per gall. Solvent 95/160, 1s. 2d. to 1s. 7d. per gall. Solvent 90/190, 9½d. to 1s. 4d. per gall.

NAPHTHALENE CRUDE.—Drained Creosote Salts, £4 10s. to £5 per ton. Whizzed, £8 per ton. Hot pressed, £8 10s. to £9 per ton.

NAPHTHALENE.—Crystals, £13 to £14 10s. per ton. Quiet. Flaked, £13 to £15 per ton, according to districts.

PITCH.—Medium soft, 57s. 6d. to 65s. per ton, f.o.b., according to district. Nominal.

PYRIDINE.—90/140, 5s. to 6s. per gall. 90/180, 3s. to 4s. 6d. per gall. Heavy, 2s. 6d. to 3s. per gall.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:

ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.

ACID ANTHRANILIC.—6s. per lb. 100 %.

ACID BENZOIC.—1s. 8½d. per lb.

ACID GAMMA.—4s. 6d. per lb.

ACID H.—3s. per lb.

ACID NAPHTHIONIC.—1s. 6d. per lb.

ACID NEVILLE AND WINTHER.—4s. 9d. per lb.

ACID SULPHANILIC.—8½d. per lb.

ANILINE OIL.—8d. per lb. naked at works.

ANILINE SALTS.—8d. per lb. naked at works.

BENZALDEHYDE.—2s. 3d. per lb.

BENZIDINE BASE.—3s. 3d. per lb. 100% basis d/d.

BENZOIC ACID.—1s. 8½d. per lb.

o-CRESOL 29/31° C.—5½d. per lb.

m-CRESOL 98/100%.—2s. 3d. to 2s. 6d. per lb.

p-CRESOL 32/34° C.—2s. 3d. to 2s. 6d. per lb.

DICHLORANILINE.—2s. per lb.

DIMETHYLANILINE.—1s. 11d. per lb.

DINITHROBENZENE.—8½d. per lb. naked at works. £75 per ton.

DINITROCHLORBENZENE.—£84 per ton d/d.

DINITROTOLUENE.—48/50° C. 8d. per lb. naked at works. 66/68° C. 9d. per lb. naked at works.

DIPHENYLAMINE.—2s. 10d. per lb. d/d.

a-NAPHTHOL.—2s. per lb. d/d.

B-NAPHTHOL.—10d. per lb. d/d.

a-NAPHTHYLAMINE.—1s. 3d. per lb.

B-NAPHTHYLAMINE.—3s. per lb.

o-NITRANILINE.—5s. 9d. per lb.

m-NITRANILINE.—3s. per lb. d/d.

p-NITRANILINE.—1s. 8d. per lb.

NITROBENZENE.—6d. per lb. naked at works.

NITRONAPHTHALENE.—1s. 3d. per lb.

R. SALT.—2s. 2d. per lb.

SODIUM NAPHTHIONATE.—1s. 8½d. per lb. 100% basis d/d.

o-TOLUIDINE.—8d. per lb.

p-TOLUIDINE.—1s. 10d. per lb. naked at works.

m-XYLIDINE ACETATE.—2s. 6d. per lb. 100%.

N. W. ACID.—4s. 9d. per lb. 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £10 5s. per ton. Good demand. Grey, £14 10s. to £15 per ton. Liquor, 9d. per gall.

CHARCOAL.—£6 to £9 per ton, according to grade and locality. Foreign competition severe.

IRON LIQUOR.—1s. 3d. per gall, 32° Tw. 1s. per gall. 24° Tw.

RED LIQUOR.—9d. to 10d. per gall.

WOOD CREOSOTE.—1s. 9d. per gall. Unrefined.

WOOD NAPHTHA, MISCIBLE.—3s. 11d. to 4s. 3d. per gall. Solvent, 4s. 3d. per gall.

WOOD TAR.—£4 to £5 per ton.

BROWN SUGAR OF LEAD.—£40 15s. per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6½d. to 1s. 5½d. per lb., according to quality; Crimson, 1s. 4d. to 1s. 6d. per lb., according to quality.

ARSENIC SULPHIDE, YELLOW.—1s. 9d. per lb.

BARYTES.—£3 10s. to £6 15s. per ton, according to quality.

CADMIUM SULPHIDE.—2s. 6d. to 2s. 9d. per lb.

CARBON BISULPHIDE.—£20 to £25 per ton, according to quantity.

CARBON BLACK.—5½d. per lb., ex wharf.

CARBON TETRACHLORIDE.—£45 to £50 per ton, according to quantity. drums extra.

CHROMIUM OXIDE, GREEN.—1s. 1d. per lb.

DIPHENYLGUANIDINE.—3s. 9d. per lb.

INDIARUBBER SUBSTITUTES, WHITE AND DARK.—5¾d. to 6 'd. per lb.

LAMP BLACK.—£35 per ton, barrels free.

LEAD HYPOSULPHITE.—9d. per lb.

LITHOPHONE, 30%.—£22 10s. per ton.

MINERAL RUBBER "RUBPRON."—£13 12s. 6d. per ton, f.o.r. London.

SULPHUR.—£9 to £11 per ton, according to quality.

SULPHUR CHLORIDE.—4d. to 7d. per lb., carboys extra.

SULPHUR PRECIP. B.P.—£47 10s. to £50 per ton.

THIOCARBAMIDE.—2s. 6d. to 2s. 9d. per lb., carriage paid.

THIOCARBANILIDE.—2s. 1d. to 2s. 3d. per lb.

VERMILION, PALE OR DEEP.—6s. to 6s. 3d. per lb.

ZINC SULPHUR.—1s. per lb.

Pharmaceutical and Photographic Chemicals

ACID, ACETIC, PURE, 80%.—£39 per ton ex wharf London in glass containers.

ACID, ACETYL SALICYLIC.—2s. 7d. to 2s. 9d. per lb.

ACID, BENZOIC, B.P.—2s. to 3s. 3d. per lb., according to quantity. Solely ex Gum, 1s. 3d. to 1s. 6d. per oz., according to quantity.

ACID, BORIC B.P.—Crystal, 36s. to 39s. per cwt.; powder, 40s. to 43s. per cwt.; extra fine powder, 42s. per cwt., according to quantity. Carriage paid any station in Great Britain, in ton lots.
ACID, CAMPHORIC.—19s. to 21s. per lb.
ACID, CITRIC.—1s. 11d. to 1s. 11½d. per lb. Less 5%.
ACID, GALLIC.—2s. 8d. per lb. for pure crystal, in cwt. lots.
ACID, PYROGALLIC, CRYSTALS.—7s. 3d. per lb. Resublimed, 8s. 3d. per lb.
ACID, SALICYLIC, B.P. PULV.—1s. 4d. to 1s. 6d. per lb. Technical.—10½d. to 11½d. per lb.
ACID, TANNIC B.P.—2s. 8d. to 2s. 10d. per lb.
ACID, TARTARIC.—1s. 4½d. per lb., less 5%.
ACETANILIDE.—1s. 5d. to 1s. 8d. per lb. for quantities.
AMIDOL.—7s. 6d. to 9s. per lb., d/d.
AMIDOPYRIN.—8s. to 8s. 3d. per lb.
AMMONIUM BENZOATE.—3s. 3d. to 3s. 6d. per lb., according to quantity. 18s. per lb. ex Gum.
AMMONIUM CARBONATE B.P.—£37 per ton. Powder, £39 per ton in 5 cwt. casks. Resublimated, 1s. per lb.
ATROPINE SULPHATE.—9s. per oz.
BARBITONE.—5s. 9d. to 6s. per lb.
BENZONAPHTHOL.—3s. 3d. per lb. spot.
BISMUTH CARBONATE.—11s. 4d. to 11s. 7d. per lb.
BISMUTH CITRATE.—10s. 4d. to 10s. 7d. per lb.
BISMUTH SALICYLATE.—10s. 7d. to 10s. 10d. per lb.
BISMUTH SUBNITRATE.—9s. 7d. to 9s. 10d. per lb.
BISMUTH NITRATE.—6s. 7d. to 6s. 10d. per lb.
BISMUTH OXIDE.—14s. 7d. to 14s. 10d. per lb.
BISMUTH SUBCHLORIDE.—14s. 4d. to 14s. 7d. per lb.
BISMUTH SUBGALLATE.—8s. 7d. to 8s. 10d. per lb. Extra and reduced prices for smaller and larger quantities of all bismuth salts respectively.
BISMUTHI ET AMMON LIQUOR.—Cit. B.P. in W. Qts. 1s. 1½d. per lb.; 12 W. Qts. 1s. 0½d. per lb.; 36 W. Qts., 1s. per lb.
BORAX B.P.—Crystal, 24s. to 27s. per cwt.; powder, 25s. to 28s. per cwt., according to quantity. Carriage paid any station in Great Britain, in ton lots.
BROMIDES.—Ammonium, 2s. 1d. to 2s. 3d. per lb.; potassium, 1s. 9¾d. to 1s. 11¾d. per lb.; sodium, 2s. to 2s. 2d. per lb.; granulated, ¼d. per lb. less; all spot. Large quantities at lower rates.
CALCIUM LACTATE.—1s. 2d. to 1s. 3d. per lb.
CAMPHOR.—Refined flowers, 2s. 11d. to 3s. per lb., according to quantity; also special contract prices.
CHLORAL HYDRATE.—3s. 2d. to 3s. 4d. per lb.
CHLOROFORM.—2s. 4¼d. to 2s. 7½d. per lb., according to quantity.
CREOSOTE CARBONATE.—6s. per lb.
ETHERS.—S.G. ·730—11¼d. to 1s. 0¾d. per lb., according to quantity; other gravities at proportionate prices.
FORMALDEHYDE.—£39 per ton, in barrels ex wharf.
GUAIACOL CARBONATE.—4s. 9d. to 5s. per lb.
HEXAMINE.—2s. 3d. to 2s. 6d. per lb.
HOMATROPINE HYDROBROMIDE.—30s. per oz.
HYDRASTINE HYDROCHLORIDE.—English make offered at 120s. per oz.
HYDROGEN PEROXIDE (12 VOLS.).—1s. 4d. per gallon, f.o.r. makers' works, naked. Winchesters, 2s. 11d. per gall. B.P., 10 vols., 2s. to 2s. 3d. per gall.; 20 vols., 4s. per gall.
HYDROQUINONE.—3s. 9d. to 4s. per lb., in cwt. lots.
HYPOPHOSPHITES.—Calcium, 3s. 6d. per lb., for 28 lb. lots; potassium, 4s. 1d. per lb.; sodium, 4s. per lb.
IRON AMMONIUM CITRATE.—B.P., 2s. 6d. to 2s. 9d. per lb. Green, 2s. 9d. to 3s. 2d. per lb.; U.S.P., 2s. 7d. to 2s. 10d. per lb.
IRON PERCHLORIDE.—18s. to 20s. per cwt., according to quantity.
IRON QUININE CITRATE.—B.P., 8¾d. to 9¼d. per oz.
MAGNESIUM CARBONATE.—Light commercial, £31 per ton net.
MAGNESIUM OXIDE.—Light commercial, £62 10s. per ton, less 2½%; Heavy commercial, £21 per ton, less 2½%; in quantity lower; Heavy Pure, 2s. to 2s. 3d. per lb., in 1 cwt. lots.
MENTHOL.—A.B.R. recrystallised B.P., 16s. per lb. net for January delivery; Synthetic, 9s. to 10s. per lb.; Synthetic detached crystals, 9s. to 12s. 6d. per lb., according to quantity; Liquid (95%), 9s. 6d. per lb.
MERCURIALS B.P.—Up to 1 cwt. lots, Red Oxide, 7s. 6d. to 7s. 7d. per lb., levig., 7s. to 7s. 1d. per lb.; Corrosive Sublimate, Lump, 5s. 9d. to 5s. 10d. per lb., Powder, 5s. 2d. to 5s. 3d. per lb.; White Precipitate, Lump, 5s. 11d. to 6s. per lb., Powder, 6s. to 6s. 1d. per lb., Extra Fine, 6s. 1d. to 6s. 2d. per lb.; Calomel, 6s. 4d. to 6s. 5d. per lb.; Yellow Oxide, 6s. 10d. to 6s. 11d. per lb.; Persulph., B.P.C., 6s. 1d. to 6s. 2d. per lb.; Sulph. nig., 5s. 10d. to 5s. 11d. per lb. Special prices for larger quantities.
METHYL SALICYLATE.—1s. 5d. to 1s. 9d. per lb.
METHYL SULPHONAL.—9s. to 9s. 3d. per lb.
METOL.—9s. to 11s. 6d. per lb. British make.
PARAFORMALDEHYDE.—1s. 9d. per lb. for 100% powder.
PARALDEHYDE.—1s. 1d. to 1s. 4d. per lb.
PHENACETIN.—2s. 6d. to 2s. 9d. per lb.
PHENAZONE.—4s. to 4s. 3d. per lb.
PHENOLPHTHALEIN.—6s. to 6s. 3d. per lb.
POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—100s. per cwt., less 2½ per cent.
POTASSIUM CITRATE.—B.P.C., 2s. 4d. to 2s. 7d. per lb.; U.S.P., 2s. 3d. to 2s. 6d. per lb.
POTASSIUM FERRICYANIDE.—1s. 9d. per lb., in cwt. lots.
POTASSIUM IODIDE.—16s.8d.to 17s.2d.per lb., according to quantity.
POTASSIUM METABISULPHITE.—6d. per lb., 1-cwt. kegs included, f.o.r. London.
POTASSIUM PERMANGANATE.—B.P. crystals, 5½d. per lb., spot.
QUININE SULPHATE.—1s. 8d. to 1s. 9d. per oz., bulk in 100 oz. tins.
RESORCIN.—2s. 10d. to 3s. per lb., spot.
SACCHARIN.—47s. per lb.; in quantity lower.
SALOL.—2s. 4d. per lb.
SODIUM BENZOATE, B.P.—1s. 8d. to 1s. 11d. per lb.
SODIUM CITRATE, B.P.C., 1911—2s. 1d. to 2s. 4d. per lb., B.P.C. 1923—2s. 6d. to 2s. 7d. per lb. U.S.P., 2s. 4d. to 2s. 7d. per lb., according to quantity.
SODIUM FERROCYANIDE.—4d. per lb., carriage paid.
SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£15 per ton, d/d consignee's station in 1-cwt. kegs.
SODIUM NITROPRUSSIDE.—16s. per lb.
SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—95s. to 100s. per cwt. Crystals, 5s. per cwt. extra.
SODIUM SALICYLATE.—Powder, 1s. 7d. to 1s. 9d. per lb. Crystal, 1s. 8d. to 1s. 10d. per lb.
SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 1d. per lb.
SODIUM SULPHITE, ANHYDROUS.—£27 10s. to £28 10s. per ton, according to quantity. Delivered U.K.
SULPHONAL.—6s. 9d. to 7s. per lb.
TARTAR EMETIC, B.P.—Crystal or powder, 2s. 1d. to 2s. 2d. per lb.
THYMOL.—Puriss., 9s. 6d. to 9s. 9d. per lb., according to quantity. Firmer. Natural, 14s. 3d. per lb.

Perfumery Chemicals

ACETOPHENONE.—7s. per lb.
AUBEPINE (EX ANETHOL).—10s. per lb.
AMYL ACETATE.—2s. 6d. per lb.
AMYL BUTYRATE.—4s. 9d. per lb.
AMYL SALICYLATE.—2s. 9d. per lb.
ANETHOL (M.P. 21/22° C.).—5s. 3d. per lb.
BENZYL ACETATE FROM CHLORINE-FREE BENZYL ALCOHOL.—2s. per lb.
BENZYL ALCOHOL FREE FROM CHLORINE.—2s. per lb.
BENZALDEHYDE FREE FROM CHLORINE.—2s. 6d. per lb.
BENZYL BENZOATE.—2s. 6d. per lb.
CINNAMIC ALDEHYDE NATURAL.—15s. 6d. per lb.
COUMARIN.—9s. 9d. per lb.
CITRONELLOL.—13s. 6d. per lb.
CITRAL.—8s. 3d. per lb.
ETHYL CINNAMATE.—6s. per lb.
ETHYL PHTHALATE.—2s. 6d. per lb.
EUGENOL.—10s. 6d. per lb.
GERANIOL (PALMAROSA).—23s. per lb.
GERANIOL.—6s. 6d. to 11s. per lb.
HELIOTROPINE.—4s. 9d. per lb.
ISO EUGENOL.—14s. 6d. per lb.
LINALOL.—Ex Bois de Rose, 15s. per lb. Ex Shui Oil, 10s. 6d. per lb.
LINALYL ACETATE.—Ex Shui Oil, 14s. 6d. per lb. Ex Bois de Rose, 18s. 6d. per lb.
METHYL ANTHRANILATE.—8s. 6d. per lb.
METHYL BENZOATE.—4s. per lb.
MUSK KETONE.—35s. per lb.
MUSK XYLOL.—7s. per lb.
NEROLIN.—3s. 6d. per lb.
PHENYL ETHYL ACETATE.—11s. per lb.
PHENYL ETHYL ALCOHOL.—10s. 6d. per lb.
RHODINOL.—38s. per lb.
SAFROL.—1s. 6d. per lb.
TERPINEOL.—1s. 6d. per lb.
VANILLIN.—16s. 6d. per lb.

Essential Oils

ALMOND OIL.—Foreign S.P.A., 10s. 6d. per lb.
ANISE OIL.—2s. 9d. per lb.
BERGAMOT OIL.—26s. per lb.
BOURBON GERANIUM OIL.—21s. per lb.
CAMPHOR OIL.—9d. per lb.
CANANGA OIL, JAVA.—12s. 9d. per lb.
CINNAMON OIL LEAF.—6s. 9d. per oz.
CASSIA OIL, 80/85%.—7s. 9d. per lb.
CITRONELLA OIL.—Java, 2s. 1d. per lb., c.i.f. U.K. port. Ceylon, pure, 2s. 2d. per lb.
CLOVE OIL (PURE 90/92%).—6s. 6d. per lb.
EUCALYPTUS OIL, AUSTRALIAN, B.P. 70/75%.—2s. 1d. per lb.
LAVENDER OIL.—Mont Blanc, 48/50%, Esters, 16s. per lb.
LEMON OIL.—12s. 6d. per lb.
LEMONGRASS OIL.—4s. 3d. per lb.
ORANGE OIL, SWEET.—35s. per lb.
OTTO OF ROSE OIL.—Anatolian, 35s. per oz. Bulgarian, 55s. per oz.
PALMA ROSA OIL.—14s. 6d. per lb.
PEPPERMINT OIL.—Wayne County, 15s. per lb.; Japanese, 7s. per lb.
PETITGRAIN.—7s. 3d. per lb. Sandalwood, Mysore, 26s. 6d. per lb., 90/95%, 16s. 6d. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.*

London, June 21, 1928.

THERE has been a fairly satisfactory volume of business passing during the past week, inquiry for forward delivery being more noticeable and prices continuing exceedingly firm. Export inquiry is active.

General Chemicals

ACETONE continues in fair, everyday request at unchanged firm prices of £65 to £67 per ton, according to quantity.

ACID ACETIC is in fair demand at unchanged prices for London delivery.

ACID FORMIC is in better demand at £47 per ton for 85%, and the forward position is very firm.

ACID LACTIC is unchanged and price holds firm at £43 for the pale quality 50% by weight.

ACID OXALIC is a bright market with price firm at £31 to £33 per ton, according to quantity.

ACID TARTARIC is in steady demand and price shows no change at 1s. 4½d. to 1s. 5d. per lb.

AMMONIUM CHLORIDE is rather uninteresting, and price remains easy at about £10 per ton for 98/100% fine white crystals.

ALUMINA SULPHATE is in very short supply for spot and near delivery. Demand is active and price exceedingly firm at £6 to £6 10s. for 17/18% technical iron free quality.

ARSENIC.—A slightly firmer tendency appears to be setting in with this product, and although no actual change has occurred in the price, producers are a little firmer in their ideas. Demand is improving.

BARIUM CHLORIDE.—As mentioned in our last two or three issues, the market has now advanced and is in very short supply for early delivery. Some of the makers are unable to accept new business until late autumn. Price for spot delivery has advanced to £9 per ton.

COPPER SULPHATE.—There is still a fair amount of business passing, especially on export account, and price is steady.

CREAM OF TARTAR continued in fair request at unchanged price of £104, less 2½% for 99/100% B.P. quality.

FORMALDEHYDE.—Demand is improving, and price is steady at £39 10s., for best quality 40% by volume in good casks.

LEAD ACETATE.—An advance in price is to be noted, and demand is fairly active for both white and brown. Present prices: white, £42 10s. to £43 10s., with brown, £1 per ton less.

LEAD NITRATE is in fair demand at £37 per ton.

LIME ACETATE continues in rather short supply, especially for the grey quality, and price remains firm.

METHYL ACETONE.—There is a good trade passing at unchanged price of £56 to £58 for 145%.

POTASSIUM CARBONATE AND CAUSTIC.—Steady.

POTASSIUM CHLORATE is in better request, especially on export account. Spot price 3d. to 3½d. per lb.

POTASSIUM PERMANGANATE.—Good business is passing at 5¼d. per lb. for best B.P. grades, with commercial ½d. per lb. less.

POTASSIUM PRUSSIATE maintains its advanced figures of £63 10s. to £65 10s. per ton, according to quantity, and the forward position is very firm.

SODIUM ACETATE continues in short supply for near delivery with demand moderate and price firm at £22 per ton.

SODIUM PHOSPHATE.—Unchanged.

SODIUM PRUSSIATE.—Active with price extremely firm at 5d. per lb.

SODIUM SULPHIDE.—In fair request at British makers' figures.

TARTAR EMETIC maintains its firm figure of 11¾d. with a satisfactory demand.

ZINC SULPHATE.—In fair demand at £12 per ton.

Coal Tar Products

The market for coal tar products remains quiet, and there is little change in prices to report from last week.

MOTOR BENZOL is unchanged, at about 1s. 4d. per gallon, on rails.

SOLVENT NAPHTHA is quoted at 1s. 1d. to 1s. 2d. per gallon, on rails, at works.

HEAVY NAPHTHA is quoted at 1s. 1d. to 1s. 2d. per gallon, on rails, at works.

CREOSOTE OIL.—The price for spot deliveries is about 6½d. per gallon, on rails, in the North, and about 7d. per gallon in London. Creosote for forward delivery remains weaker.

CRESYLIC ACID remains weak, the 98/100% quality being quoted at about 2s. 6d. per gallon f.o.b., and the dark quality, 95/97%, is quoted about 1s. 10d. to 1s. 11d. per gallon.

NAPHTHALENES are unchanged, the 74/76 quality being quoted at £6 per ton, and the 76/78 quality at £6 10s. to £7 per ton.

PITCH is unchanged and the value remains at 60s.–65s. per ton, f.o.b., U.K. ports.

Latest Oil Prices

LONDON.—June 20.—LINSEED OIL firm and 2s. 6d. to 5s. per ton higher. Spot, ex mill, £29 10s.; June, £28 10s.; July-August, £28 17s. 6d.; September-December, £29 7s. 6d.; and January-April, £29 12s. 6d., naked. RAPE OIL inactive. Crude extracted, £41 15s.; technical refined, £43 15s., naked, ex wharf. COTTON OIL quiet. Egyptian crude, £35; refined common edible, £40; deodorised, £42 per ton, naked. TURPENTINE firm and 1s. per cwt. higher. American, spot, 45s.; July-December, 45s. 9d.

HULL.—June 20.—LINSEED OIL.—Spot and June, £28 15s.; July-August, £28 15s.; September-December, £29 2s. 6d.; January-April, £29 15s. per ton, naked. COTTON OIL.—Bombay crude, £31; Egyptian crude, £33 10s.; edible refined, £37 10s.; technical, £35; deodorised, £39 10s. per ton, naked. PALM KERNEL OIL.—Crushed 5½ per cent., £38 10s. per ton, naked. GROUNDNUT OIL.—Crushed-extracted, £39; deodorised, £43 per ton. SOYA OIL—Extracted and crushed, £33; deodorised, £36 10s. per ton. RAPE OIL.—Crude extracted, £40 15s.; refined, £42 15s. per ton. TURPENTINE.—Spot, 47s. 6d. per cwt., net cash terms, ex mill. CASTOR OIL and COD OIL unchanged.

Nitrogen Products

Export.—During the last week prices have continued to be easier, and have fluctuated from £9 5s. to £9 10s. f.o.b. U.K. port in single bags for prompt shipment. Although there are few inquiries it is understood that higher prices are quoted for forward shipment.

Home.—The home market continues dull. Small purchases are being made for immediate consumption. The large buyers are holding back, pending the announcement of producers' price scale.

Nitrate of Soda.—The nitrate market continues sluggish, but the prices have not been marked down. The price f.a.s. Chile continues at 16s. to 16s. 6d. per metric quintal. In countries of consumption, very low prices have been quoted by merchants who wish to avoid carrying the goods over to the new season.

New Brunswick Potash Discoveries

MR. L. H. COLE, of the Mines Branch of the Dominion Department of Mines, states that recently at Gautreau, Westmoreland County, New Brunswick, about eight miles south-east of Moncton, a well was drilled in search of oil and gas by the D'Arcy Exploration Co. on behalf of the New Brunswick Gas and Oilfields, Ltd. This well was sunk to a depth of 1,878 ft., and penetrated a bed of rock salt 485 ft. thick, the top of the salt bed being at a depth of 1,295 ft. from the surface. As the drilling was done by a standard churn drill no cores were recovered, but chip samples were taken for every 5 ft. in depth. No special precautions are known to have been taken to prevent soluble salts from being washed out of these cuttings. A study of the chip samples reveals some interesting data. Four composite samples, each representing a 20 ft. section, were selected for analysis. The results are interesting, since all four were found to contain potassium, the percentage of this element ranging from 0·21 to 0·93, and averaging 0·66 per cent. The individual 5 ft. samples embracing the complete salt strata were then separately tested for potash by the flame test, and all showed the presence of potash, a number showing quite a persistent potash flame. Of those showing stronger reactions, twelve were selected and analysed for potassium, with results ranging from 0·23 to 1·77 per cent., and averaging 0·59 per cent. It was impossible to determine the exact form in which the potash occurs, but judging from the chemical analyses of the 20 ft. samples, polyhalite, kainite and carnallite are the most probable minerals present. The results of the flame tests indicate concentrations of potash salts at a number of definite horizons in the salt strata, but further core drilling is the only way in which this may be accurately determined. The locality would appear to be well worthy of further careful examination by methods especially designed to recover, in the form of drill cores, a complete section of the potash bearing beds.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinion.*

Glasgow, June 20, 1928.

BUSINESS in the heavy chemical market has been good and there is an appreciable amount of export inquiry going round; notwithstanding this, however, prices show little or no change.

Industrial Chemicals

ACETONE B.G.S.—£64 to £67 per ton, ex store, according to quantity.

ACID ACETIC.—98/100%, glacial, £56 to £67 per ton, according to quality and packing, c.i.f. U.K. ports; 80% pure, £37 10s. per ton, ex wharf; 80% technical, £37 10s. per ton, ex wharf.

ACID BORIC.—Crystals, granulated or small flakes, £30 per ton. Powder, £32 per ton packed in bags, carriage paid U.K. stations.

ACID CARBOLIC, ICE CRYSTALS.—Quoted 6¾d. per lb. delivered. In little request.

ACID CITRIC, B.P.—Offered for spot delivery at 1s. 11½d. per lb., less 5% ex store. Quoted 1s. 11d. per lb., less 5%, ex wharf, to come forward.

ACID HYDROCHLORIC.—Usual steady demand. Arsenical quality, 4s. per carboy. Dearsenicated quality, 5s. 6d. per carboy, ex works, full wagon loads.

ACID NITRIC.—80° quality, £24 10s. per ton, ex station, full truck loads.

ACID OXALIC, 98/100%.—On offer from the Continent at 3¼d. per lb., ex store. Spot material quoted 3½d. per lb., ex store. In better demand.

ACID SULPHURIC.—£2 15s. per ton, ex works, for 144° quality; £5 15s. per ton for 168° quality. Dearsenicated quality, 20s. per ton extra.

ACID TARTARIC, B.P. CRYSTALS.—Now quoted 1s. 4¼d. per lb. less 5% ex wharf.

ALUMINA SULPHATE, 17/18%, IRON FREE.—Quoted £5 10s. per ton, c.i.f. U.K. ports, prompt shipment. Spot material available at about £5 15s. per ton, ex store.

ALUM LUMP POTASH.—Spot material available at about £9 per ton, ex store. Crystal meal quoted £8 10s. per ton, ex store. Lump quality on offer from the Continent at £8 5s. per ton, c.i.f. U.K. ports.

AMMONIA, ANHYDROUS.—Quoted 9d. per lb., carriage paid, containers extra and returnable.

AMMONIA CARBONATE.—Lump, £37 per ton; powdered, £39 per ton, packed in 5 cwt. casks, delivered or f.o.b. U.K. ports.

AMMONIA LIQUID, 880°.—Unchanged at about 2½d. to 3d. per lb., delivered according to quantity.

AMMONIA MURIATE.—Grey galvanisers' crystals of British manufacture quoted £21 to £22 per ton, ex station. Continental about £19 per ton, c.i.f. U.K. ports. Fine white crystals of continental manufacture quoted £16 15s. per ton, c.i.f. U.K. ports.

ARSENIC, WHITE POWDERED.—On offer for prompt despatch from mines at £19 per ton, ex wharf. Spot material quoted £20 per ton, ex store.

BARIUM CARBONATE.—98/100% English material on offer at £7 5s. per ton, ex store. Continental quoted £7 per ton, c.i.f. U.K. ports.

BARIUM CHLORIDE, 98/100%.—Large white crystals quoted £6 15s. per ton, c.i.f. U.K. ports.

BLEACHING POWDER.—British manufacturers' contract price to consumers, £6 12s. 6d. per ton, delivered, minimum 4-ton lots. Continental on offer at £6 10s. per ton, ex wharf.

CALCIUM CHLORIDE.—British manufacturers' price £4 5s. to £4 15s. per ton, according to quantity and point of delivery. Continental material on offer at £3 12s. 6d. per ton, c.i.f., U.K. ports.

COPPERAS, GREEN.—Unchanged at about £3 10s. per ton, f.o.r. works or £4 12s. 6d. per ton, f.o.b. U.K. ports for export.

COPPER SULPHATE.—Quoted £24 10s. per ton, c.i.f. U.K. ports, but some spot parcels available at somewhat less.

FORMALDEHYDE, 40%.—Quoted £35 10s. per ton, c.i.f. U.K. ports. Spot material now on offer at £38 per ton, ex store.

GLAUBER SALTS.—English material unchanged at £4 per ton, ex store or station. Continental quoted £2 15s. per ton, c.i.f., U.K. ports.

LEAD, RED.—Imported material on offer at £31 per ton, ex store.

LEAD, WHITE.—Quoted £31 10s. per ton, ex store.

LEAD ACETATE.—White crystals quoted £39 15s. per ton, c.i.f. U.K. ports. Brown, £32 10s. per ton, c.i.f. U.K. port. Spot material on offer at £42 15s. per ton, ex store, spot delivery.

MAGNESITE, GROUND CALCINED.—Quoted £8 10s. per ton, ex store, in moderate demand.

METHYLATED SPIRIT.—Industrial quality 64° O.P. quoted 1s. 7d. per gallon, less 2½%, delivered.

POTASSIUM BICHROMATE.—4½d. per lb. delivered, minimum 4-ton lots. Under 4-ton lots ½d. per lb. extra.

POTASSIUM CARBONATE, 96/98%.—Quoted £25 10s. per ton, ex wharf, prompt shipment from the Continent. Spot material available at £26 10s. per ton, ex store.

POTASSIUM CHLORATE, 99/100%.—Powder quoted £23 10s. per ton, c.i.f. U.K. ports. Crystals 30s. per ton extra. B.P. quality, crystals or powder offered at £32 per ton, c.i.f. U.K. ports.

POTASSIUM NITRATE.—Refined granulated quality quoted £19 2s. 6d. per ton, c.i.f. U.K. ports. Spot material on offer at about £20 10s. per ton, ex store.

POTASSIUM PERMANGANATE, B.P. CRYSTALS.—Quoted 5¼d. per lb., ex wharf.

POTASSIUM PRUSSIATE (YELLOW).—Unchanged at about 6½d. per lb., ex store, spot delivery. Offered from the Continent at 6⅜d. per lb.

SODA CAUSTIC.—Powdered, 98/99%, £17 17s. 6d. per ton; solid, 76/77%, £14 10s. per ton, and 70/72%, £13 12s. 6d. per ton, minimum 4-ton lots carriage paid on contract. Spot material 10s. per ton, extra.

SODA HYPOSULPHITE.—Large crystals of English manufacture quoted £8 17s. 6d. per ton, ex station, minimum 4-ton lots. Pea crystals on offer at £14 15s. per ton, ex station, minimum 4-ton lots.

SODA NITRATE.—Quoted £11 per ton, ex store.

SODA NITRITE, 100%.—Quoted £19 10s. per ton, ex store.

SODA PRUSSIATE.—In moderate demand. Spot material now quoted 4¾d per lb., ex store.

SODA SULPHATE (SALTCAKE).—Prices 50s. per ton, ex works, for unground quality, 52s. 6d. per ton, delivered. Ground quality, 2s. 6d. per ton extra.

SODA SULPHIDE.—Prices for home consumption: Solid, 60/62%, £9 per ton; broken, 60/62%, £10 per ton; crystals, 30/32%, £7 2s. 6d. per ton, delivered buyers' works on contract, minimum 4-ton lots. Special prices for some consumers. Spot material 5s. per ton extra.

SODIUM ACETATE.—Spot material on offer at about £22 per ton, ex store.

SODIUM BICARBONATE.—Refined recrystallised £10 10s. per ton, ex quay or station. M.W. quality 30s. per ton less.

SODIUM BICHROMATE.—Quoted 3d. per lb., delivered buyers' works, minimum 4-ton lots. Under 4 and over 2-ton lots, 3 1/16d. per lb. Under 2-ton lots, 3⅛d. per lb.

SODIUM CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station. Powdered or pea quality 27s. 6d. per ton extra. Light soda ash £7 3s. 9d. per ton, ex quay, minimum 4-ton lots with various reductions for contracts.

SULPHUR.—Flowers, £12 per ton; roll, £10 15s. per ton; rock, £10 12s. 6d. per ton; ground American, £9 5s. per ton, ex store. Prices nominal.

ZINC CHLORIDE.—British material, 98/100%, quoted £24 15s. per ton, f.o.b. U.K. ports; 98/100%, solid on offer from the Continent at about £21 15s. per ton, c.i.f. U.K. ports. Powdered, 20s. per ton extra.

ZINC SULPHATE.—Quoted £11 per ton, ex wharf, prompt shipment from the Continent.

NOTE.—The above prices are for bulk business and are not to be taken as applicable to small parcels.

Material for Filling Etched Lines in Thermometers

IT is a matter of experience that the materials ordinarily used for colouring the lines and figures on etched stem thermometers may not be permanent under all conditions of use. The colour in the lines of chemical thermometers may burn out at high temperatures, or at lower temperatures it may be removed by the action of fluids in which the thermometers are immersed. A new material developed by P. T. Hannen and H. D. Bruce, of the U.S. Bureau of Standards, is claimed to be much superior in durability to those now in use. It consists of a mixture of water glass and finely divided manganese dioxide, which is applied as a paste. A thermometer treated with this material retains the colour even when heated to 500° C., and can be used in hot oil, water or steam, without injuriously affecting the visibility of the lines. Clinical thermometers may be treated with any of the common antiseptic solutions without removing this colouring material. The ability of the material to resist attack by acids and alkalies has not been thoroughly tested, but the indications are that it is not entirely resistive to these. Pigments, other than manganese dioxide, may be used with the water glass to produce other colours. A description of the material and directions for its use are given in a letter circular which may be obtained on application to the U.S. Bureau of Standards.

Manchester Chemical Market

[From Our Own Correspondent.]

Manchester, June 21, 1928.

The approaching summer holidays in the Lancashire industrial districts —a series of " wakes " which will extend over a period of several months—naturally has a quietening influence on the trade in chemical products on this market. Although specifications against contracts are on a not unsatisfactory scale, individual transactions in prompt or near delivery parcels are, for the most part, on modest lines, and keen competition among sellers is in evidence.

Heavy Chemicals

On the whole, a quietly steady trade is being put through in the case of nitrite of soda, with current offers of this material ranging from about £19 5s. to £19 10s. per ton. There is some inquiry about for chlorate of soda, and values are about unchanged on the week at 2¾d. per lb. Sulphide of sodium continues to move off in relatively limited quantities, with the commercial material on offer at about £7 15s. per ton, and the 60–65 per cent. concentrated solid at about £10. A quietly steady trade is reported in the case of caustic soda, and quotations remain firm at from £13 7s. 6d. to £15 7s. 6d. per ton, according to quality. In the case of prussiate of soda, the demand during the past week is reported to have been on rather a slow scale, but values are maintained at from 4½d. to 5d. per lb. Saltcake is not particularly active, but contract quotations for this material are still at about £2 12s. 6d. per ton. Phosphate of soda meets with a limited inquiry, with prices fairly steady at from £12 to £12 10s. per ton. Bicarbonate of soda continues to be quoted here on the basis of £10 10s. per ton, and a moderate business is being done. With regard to hyposulphite of soda, there is a quiet movement in this section, with photographic grade on offer at about £15 10s per ton, and commercial at £9 5s. Alkali and bleaching powder are both steady at £6 2s.6d. and £7 per ton, respectively, and buying interest in both of these materials is on fairly satisfactory lines. There is a moderate inquiry about in the case of bichromate of soda, and prices are steady at 3d. per lb.

The demand for permanganate of potash this week has been on the quiet side, and the tendency of prices appears to be towards somewhat lower levels, B.P. offering at from 5d. to 5⅛d. per lb. and commercial at round 4¾d. Yellow prussiate of potash keeps steady and meets with a fair demand at from 6¾d. to 7¼d. per lb. A quiet business is reported in the case of carbonate of potash, values of which are maintained at £25 per ton. Chlorate of potash is about unchanged on the week at 3d. per lb., and a moderate trade in this section is being transacted. Current offers of bichromate of potash range from 4d. to 4⅛d. per lb., a quietly steady demand being met with. Caustic potash is well held at £33 5s. per ton for prompt delivery of one to five-ton lots.

The movement of arsenic on this market continues on the slow side, but there has been no further change in the price position, white powdered, Cornish makes, still being quoted here at about £17 per ton, at the mines. Sulphate of copper is attracting some attention, and prices are fairly steady at from £26 10s. to £27 per ton. The lead compounds generally are in quiet demand, but values are held, nitrate being quoted at £37 per ton, and white and brown acetate at £40 to £41 and £39 10s. per ton, respectively. Acetate of lime seems to be firm, although there is not a great deal of business passing in this material at the moment; grey is quoted at £16 10s. per ton, and brown at £9 10s.

Acids and Tar Products

Offers of tartaric acid are on a fairly steady basis, although buying interest in this is still restricted; values to-day range from 1s. 4d. to 1s. 4¼d. per lb. Citric acid also is rather slow, with offers at from 1s. 10¼d. to 1s. 11d. per lb. Acetic acid is steady and in moderate request at £36 to £36 10s. per ton for the 80 per cent. commercial quality, and about £66 for glacial. Oxalic acid meets with some inquiry at from 3¼d. to 3½d. per lb.

Pitch is nominally steady and unchanged on the week at £2 17s. 6d. per ton, but little actual business is being done just now. An easy tendency is still in evidence in the case of creosote oil, offers being at about 6½d. per gallon at works without attracting much attention from buyers. Solvent naphtha is in moderate request and fairly steady at round 1s. 2d. per gallon. Carbolic acid is in quiet demand at 2s. 4d. per gallon for crude 60's, and about 6½d. per lb. for crystals.

Increased Canadian Production of Industrial Alcohol

A marked increase in the production of industrial and commercial alcohols is a feature of a Report on the Distilled Liquor Industry in Canada for the Calendar years 1925-1926, recently issued by the Dominion Bureau of Statistics. The total production of spirits for 1926 amounted to 7,318,320 proof gallons, as compared with 5,792,863 proof gallons in 1925, an increase of 26.33 per cent. Output of all products was valued at $12,216,906 in 1926, compared with $9,897,863 in 1925, an increase of 23.4 per cent. Industrial and commercial alcohol advanced in production from 1,848,002 gallons valued at $1,144,808 in 1925 to 3,139,278 gallons in 1926 valued at $1,692,081, an increase in gallons of 1,291,276 or 69·87 per cent., and in value of $547,273. Potable spirits advanced from 3,924,100 proof gallons in 1925, valued at $8,478,777, to 4,179,442 proof gallons, valued at $10,160,396, in 1926, an increase of 255,342 gallons or 6·5 per cent. The values of production by provinces in 1926 was Ontario $8,137,167; Quebec, $2,545,087; other provinces, $1,534,226. In 1926 there were 15 establishments in the distilled liquor industry in Canada, a decrease of one over the preceding year; capital invested in 1926 was $26,412,006 compared with $24,506,712 in 1925, an increase of $1,915,294; the number of employees on salaries and wages advanced from 834 receiving $1,049,985 in 1925 to 1,015 receiving $1,287,122 in 1926. An increase for 1926 both in the import and export of distilled liquors is a feature of the report. In 1926 imports were 1,601,132 gallons valued at $26,451,677, compared with 1,366,907 gallons, with a value of $22,008,736, for 1925; exports in 1926 were 1,610,211 gallons, valued at $18,870,228, compared with 1,131,896 gallons for 1925, valued at $13,519,482.

Imperial Chemicals New Issue

The directors of Imperial Chemical Industries announce that the 3,363,855 new Ordinary shares of £1 each and 2,242,570 new deferred shares of 10s. each, which as intimated at the recent meeting, it had been decided to issue, are now offered in the first place to existing ordinary shareholders in the proportion of three new ordinary shares and two new deferred shares for every existing thirty ordinary shares. The ordinary shares are offered at 13s. per share premium, and the deferred shares at par. Holders of ordinary or deferred shares who wish to do so may apply for any balance of the present issue—ordinary or deferred shares, or both—that may remain after the " rights " of the ordinary shareholder have been satisfied.

Fractions of one half of a share will be treated as one share, and ignored if less than one-half. Any " rights " not exercised on or before July 6 next will be forfeited. The Finance Company of Great Britain and America is underwriting the issue for a commission of 9d. per share for each ordinary share and 4½d. per share for each deferred share, out of which commission that company will bear the whole of the expenses of the issue. Forms of acceptance and renunciation have been sent out.

Award of Dyers' Company's Research Medal

Professor F. M. Rowe, D.Sc., F.I.C., is recommended by the committee of adjudication to be recipient of the Dyers' Company's Research Medal of the Society of Dyers and Colourists. The basis of the recommendation is Professor Rowe's paper on " A New Reaction of Certain Diazosulphonates derived from β-Naphthol-1-sulphonic Acid, leading to the preparation of Phthalazine, Phthalazone, and Phthalimidine Derivatives." As Professor Rowe has already received the medal on a previous occasion, it is recommended that a bar be attached to the medal already in his possession. It is suggested that a diploma should be given to his collaborators, Miss E. Levin, Mr. A. C. Burns, Dr. J. S. H. Davies, and Mr. W. Tepper.

Company News

CYPRUS ASBESTOS CO.—A profit of £31,004 is reported for the year 1927, converting the debit balance of £2,017 brought in from 1926 into a credit balance of £28,987.

ROSARIO NITRATE CO.—The accounts for 1927 show a loss of £39,830, which, added to the balance from the last account, £20,076, makes a total debit on the profit and loss of £59,906.

TARMAC.—The board have authorised the payment on July 1 next of a dividend on the 5½ per cent., free of income-tax cumulative preference shares, in respect of the half-year ending June 30, 1928.

IDRIS HYDRAULIC TIN.—The directors have declared an interim dividend of 10 per cent., less income-tax at 4s. in the £, in respect of the profits for the year ending December 31, 1928, payable on July 27.

TARSLAG (1923).—The directors have decided that the payment of a dividend on June 30 is not warranted in view of the serious reduction in selling prices and the necessity for conserving the financial resources of the company.

NEUCHATEL ASPHALTE.—The profit for last year, after providing for depreciation and for reserves for maintenance, amounted to £51,545, to which is added a balance of £63,599 brought forward, making £115,145. The directors recommend that £10,000 be transferred to reserve account, and that a final dividend of 9d. per ordinary share, less income tax, representing a total dividend of 1s. 3d. per share for the year, be declared, payable on July 6 next, £68,902 being carried forward.

SHELL TRANSPORT AND TRADING CO.—Including the balance of £230,486 brought forward, there is a credit to the profit and loss account for the year ended December 31 last, of £5,643,098. After deducting management, legal and other expenses, which in all amount to £42,917, there remains £5,600,180 to be carried to the balance-sheet. The directors recommend final dividend on ordinary shares of 3s. per share, making 25 per cent. for the year, free of tax, leaving a sum of £236,612 to be carried forward.

SAN SEBASTIAN NITRATE CO.—For the year ended December 31 last, the report states that the gross profit and transfer fees amount to £1,475, and after providing for stoppage expenses, £1,760, Chilean taxes, £685, London office charges, £1,222, and interest and discount, £107, the result is a loss of £2,299. After deducting the balance brought forward of £232, there remains a debit on the profit and loss account of £2,067. The annual meeting will be held at Dashwood House, London, on June 28, at 12 noon.

NEW PACCHA AND JAZPAMPA NITRATE.—The gross profit for the year ended December 31 last, is stated to be £1,379, including interest and transfer fees, and after providing for stoppage and re-opening expenses, £4,442, repairs and renewals at oficina " Jazpampa," £3,812, and London office expenses, £1,319, the result is a net loss of £8,193. After adding the balance brought forward of £784, there remains a debit on profit and loss account of £8,977. In view of the improved prospects of the industry, it was decided to re-open oficina " Jazpampa " in December last, and manufacture has since been proceeding satisfactorily.

SENSIBLE HEAT DISTILLATION.—The report states that the balance-sheet as at December 31, 1927, discloses that agreements have been concluded for the sale of patent rights of the " L and N " Process in Great Britain and Australia, in consideration of £50,000 in cash and 175,000 fully-paid ordinary shares of par value of £1 each. The directors have written off for expenditure at Barugh Works, Yorkshire, general administration, research work, patent fees, etc., and preliminary expenses £15,000, leaving £208,750, which has been placed to capital reserve account. Agreements with regard to operation of rights for " L and N " Process and other patents in certain foreign countries are in present negotiation, and the directors anticipate completion at an early date. The annual meeting will be held at St. Ermin's Hotel, Broadway, Westminster, S.W., on June 25, at 2.30 p.m.

BRITISH ALUMINIUM CORPORATION.—The profit for the year ended December 31, 1927, amounts to £54,668, and, after providing for debenture loan and mortgage interest, there is a deficit of £48,037, which, added to the balance of £76,348 brought forward, and £5,657 for depreciated value in stock of stores, gives a debit balance of £130,043 to be carried forward. Supplies of aluminium have been coming forward regularly from the associated company in Norway, states the report, and the output from company's own furnaces at Dolgarrog shows a substantial increase. There appears to be no falling off in the demand for the company's metal, and the sales department has already secured a market for practically the whole output for the present year at satisfactory prices. The annual meeting will be held at Wellington House, Buckingham Gate, London, on June 26, at 11 a.m.

MAGADI SODA CO.—The accounts for 1927 show a profit of £36,879, after providing £15,000 for depreciation, and £29,997 for debenture interest at the full rate of 6 per cent. for the year. This compares with a loss for 1926 of £35,498 before meeting depreciation. Under the scheme of arrangement dividends on the first and second preference shares became cumulative as from January 1, 1927. As the loss carried forward from 1926, amounting to £35,498, leaves an available balance of profit of only £1,381 for the year under review, the directors recommend that no preference dividend be declared for the present, and that this balance be carried forward to 1928. The directors have considered it advisable to use £5,523 of £12,259 standing to reserve under the heading of provision for contingencies and renewals in writing off part of the preliminary expenses, which now stand at the reduced figure of £6,000. As to conditions at Lake Magadi, the directors report that the whole of the plant has now been thoroughly overhauled, and adequate provision made against breakdown by duplication of vital units.

New Chemical Trade Marks

Applications for Registration

This list has been specially compiled for us from official sources by Gee and Co., Patent and Trade Mark Agents, Staple House, 51 and 52, Chancery Lane, London, W.C.2, from whom further information may be obtained, and to whom we have arranged to refer any inquiries relating to Patents, Trade Marks, and Designs.

Opposition to the Registration of the following Trade Marks can be lodged up to July 6, 1928.

" LANASETE."

489,982. Class 1. Chemical substances used in manufactures, photography, or philosophical research, and anti-corrosives. Society of Chemical Industry in Basle (a joint stock company organised under the laws of the Swiss Republic), 141 to 227, Klybeckstrasse, Basle, Switzerland; manufacturers and merchants. March 29, 1928. (To be Associated. Sect. 24.)

" BARKITE."

490,674. Class 1. Solvents, being chemical substances for use in manufactures. Howards and Sons, Ltd., Uphall Works, Uphall Road, Ilford, Essex; chemical manufacturers. April 21, 1928.

" CROCOLAX."

490,871. Class 1. Paints, varnishes, enamels, colours, distempers, japans, lacquers, driers, wood preservatives, wood stains, anti-corrosive and anti-fouling compositions, and anti-corrosive oils. Titanine-Emaillite, Ltd., Empire House, 175, Piccadilly, London, W.1; manufacturers. May 1, 1928.

" HORMIPAN."

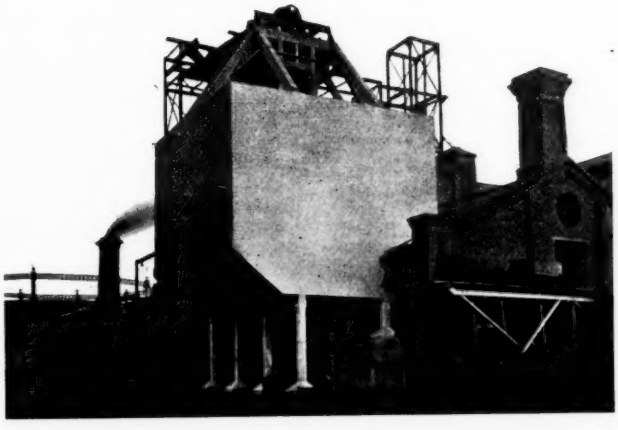
490,538. Class 3. Chemical substances prepared for use in medicine and pharmacy. Bayer Products, Ltd., 31 to 34, Basinghall Street, London, E.C.2; merchants and manufacturers. April 18, 1928.

Chemical Trade Inquiries

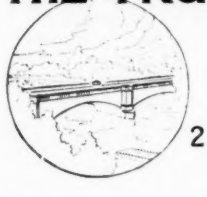
The following inquiries, abstracted from the " Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

MACHINERY FOR THE DEHYDRATION OF GLAUBER SALT.—The Officer-in-Charge of the office of His Majesty's Trade Commissioner at Toronto reports that a local firm is in the market for machinery for the dehydration of glauber salt, with a capacity of 50 tons a day. (Reference B.X. 4516.)

Unequalled experience of reinforced concrete



We have been responsible for the engineering of so many thousands of reinforced concrete buildings that no new project is approached in a timorous, hesitating way, but with the certainty which comes of mature knowledge. Our practical experience being so wide and the necessity for correct design in concrete work being so vital, we can be commissioned with all confidence to deal enthusiastically and expeditiously with any type of reinforced concrete construction.



THE TRUSSED CONCRETE STEEL CO. LTD.

Reinforced Concrete Engineers

22 Cranley Gardens. South Kensington. S.W.7.

S.D. 17-104

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

County Court Judgments

[NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.]

WRIGHT (E.) AND CO., LTD., 85, Brook Street, Bradford, chemical manures manufacturers. (C.C., 23/6/28.) £14 17s. 5d. April 27.

Mortgages and Charges

*[NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case, the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.]*

BRISTOW (T. F.) AND CO., LTD., London, N.W., soap manufacturers. (M., 23/6/28.) Registered June 1, mort., to Bank; charged on land and factory at corner of Edgware Road and Annesley Avenue, Hendon. *Nil. May 15, 1928.

SUFFOLK CHEMICAL CO., LTD., London, S.W. (M., 23/6/28.) Registered May 29, £10,000 deb. and £10,000 deb., to Bank; general charges.

Receivership

DUROGLOSS POLISHES, LTD. (R., 23/6/28.) S. Cole C.A., of "Fairview," Stanmore, Middlesex, was appointed receiver and manager by Order of Court dated May 25, 1928.

London Gazette, &c.

Bankruptcy Information

YATES, Robert, trading as ROBERT YATES AND CO., importers of heavy and fine chemicals, 96, Renfield Street, Glasgow. (S.B., 23/6/28.) Estates sequestrated June 12. Meeting to elect trustee and commissioners on June 25 in the Faculty Hall, St. George's Place, Glasgow, at 12 noon.

New Companies Registered

BRITISH BENZOL AND COAL DISTILLATION, LTD., 52-54, Leadenhall Street, London, E.C.3. Registered as a "public" company on June 12. Nominal capital, £250,000 in 400,000 preferred ordinary shares of 10s. each and 1,000,000 deferred shares of 1s. each. Distillers of coal and coal products, manufacturers of by-products from coal, coke manufacturers, coal and coke merchants, gas makers, oil distillers, and refiners, tar and chemical manufacturers, etc.

CARBOCITE SMOKELESS FUEL, LTD., Sentinel House, Southampton Row, London, W.C.1. Registered as a "private" company on June 13. Nominal capital, £30,000 in 25,000 7½ per cent. cumulative participating preference shares of £1 each and 100,000 deferred shares of 1s. each. To adopt an agreement between F. M. Crossman of the one part, and S. Brashier and A. T. Frampton of the other part, to carry on in England and elsewhere the business of manufacturers of compressed fuels, synthetic products, petrol, petroleum, benzine, lubricating oil, and all oils, whether edible or non-edible, refiners, seed crushers, etc. Directors: S. Brashier, F. M. Crossman, and A. T. Frampton.

J. CHAMBERS AND CO., LTD. Registered June 15. Nominal capital, £1,000 in £1 shares. Manufacturers and merchant chemists, druggists, drysalters, oil and colour men, chemists' and druggists' sundriesmen, etc. Director: F. D. Chambers, Brookhill, Overthorpe, Eastwood, Notts.

CHEMICAL ENGINEERING DEVELOPMENT CO., LTD., 3 and 4, Lincolns Inn Fields, W.C.2. Private company. Registered June 19. Capital, £1,000 in 10s. shares. Objects: To acquire and turn to account patents, inventions, etc., and to carry on the business of chemists, druggists, importers and manufacturers of and dealers in chemicals, industrial and other preparations and articles; ironfounders, mechanical engineers and manufacturers of agricultural implements and other machinery, etc. The subscribers (each with one ordinary share) are: E. E. Spence, Field Cottage, Kerridge, near Macclesfield, chemical manufacturer; Dr. V. G. Walsh, 37, Devonshire Place, W.

FAIRY DYES, LTD., 61, Well Road, Glasgow. Registered in Edinburgh as a "public" company on June 9. Nominal capital, £100,000 in 36,000 7½ per cent. cumulative participating preference shares of £1 each and 256,000 ordinary shares of 5s. each. To acquire the business of dye manufacturers carried on by Fairy Dyes, Ltd. Director: F. Shoesmith, Hawthorn Lodge, Cathcart, Glasgow.

MAGNESITE PRODUCTS, LTD. Registered June 16. Nominal capital, £3,000 in 2,900 ordinary shares of £1 each and 2,000 deferred shares of 1s. each. To carry on the business of makers and preparers of and dealers in calcined magnesite, limestone, dolomite or cement and mixtures thereof with other materials for the construction of floors, and other articles; makers and sellers of all other preparations of calcined magnesite and similar materials, such as weather and water-resisting compositions, heat insulation materials in all forms for boiler and steam pipe coverings, and similar purposes. A subscriber: A. W. Comber, 226, Bishopsgate, London, E.C.

TITANUITE, LTD., Aldwych House, Aldwych, London, W.C. Registered June 15. Nominal capital, £100 in £1 shares. Manufacturers of and dealers in titanium, thorium, zirconium, and kindred metals, copper, zinc, spelter and antimony smelters and refiners, desilverers, manufacturers of titanium oxide and other articles and products, etc.

VELTEXCO, LTD. Registered June 13. Nominal capital, £100 in £1 shares. To manufacture, transform, treat and trade in all textile fabrics, to prepare and trade in all materials and chemical products, being either colouring or any other materials connected with the textile industry. Directors: P. W. Williams, G. M. Hamilton, 19, Albert Hall Mansions, London, S.W.7; and J. G. Budgen.

WALTON CHEMICAL CO., LTD., 5, Fenwick Street, Liverpool. Registered June 11. Nominal capital, £500 in £1 shares. Manufacturers of and dealers in extracts, chemicals, materials and products of any nature for chemical, industrial and other purposes, etc. Directors: R. C. Lindsay, H. Chantler, and S. Barter.

Benn Brothers' Other Journals

THE CABINET MAKER.—F.T.B.A. Garden Party; The Display of Cutlery and Table Ware; "Industrial Design in Germany and at Home," by H. H. Peach.

THE ELECTRICIAN.—"Coal Combustion for Steam Generation," by F. H. Rosencrantz; "Impressions of the Paris Fair," by Theodore Rich; The I.M.E.A. Convention.

THE FRUIT GROWER.—Problems of Pest Cortrol; Cornish Growers' Educational Tour; Australian Visitors to Scottish Market Gardens.

GARDENING ILLUSTRATED.—Nature in the Rock Garden; Asphodels; Daffodils from Seed; Double Violets.

THE GAS WORLD.—Thermal Insulation of Retort Settings; Some Factors Influencing the Reactivity of Coke; The Engineering Conference of the Institution of Civil Engineers.

THE HARDWARE TRADE JOURNAL.—Advertising for Ironmongers: A Co-operative Scheme Outlined; Landlord and Tenant Act; Points for Retail Traders; Industrial Rotheram: A Review of Local Enterprise.

THE TIMBER TRADES JOURNAL.—Norwegian Flooring Market; Esthonia and Cutting Leases in Russia; Custom of the Port; The Life of a Saw.